

**ANNUAL MANAGEMENT REPORT
FOR THE
SUBSISTENCE AND COMMERCIAL FISHERIES
OF THE KUSKOKWIM AREA**

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PREFACE

The Division of Commercial Fisheries (CF) of the Alaska Department of Fish & Game (ADF&G) is responsible for the management of commercial and subsistence fisheries in the Kuskokwim Area. This annual management report details the activities of the CF Division in the Kuskokwim Area in 2000.

This report is one of a series of Annual Management Reports detailing the management activities of the Division of Commercial Fisheries staff in the Kuskokwim Area. The 1960-1974 management reports for the "Kuskokwim District" appear in the Arctic-Yukon-Kuskokwim Area report series. The 1975-1986 management reports appear in the Kuskokwim Area Annual Report series. The Annual Management Report became a part of the Regional Information Report Series in 1987.

Data presented in this report supersede information found in previous management reports. This report includes summary data from many research projects. Complete documentation of these projects and results appear in separate reports. The bibliography includes both referenced and unreferenced reports concerning the Kuskokwim Area fisheries. Some of the data presented are preliminary and may be presented with minor differences in future reports.

To simplify use of this report, the tabular data are separated into current year tables and appendices of historical data. The appendices are separated by fishery and fishing district. The appendices show annual comparisons and information that seldom change.

The ages of fish in this report are presented as both total age, year spawned to year recorded and in the European notation. In the European system, the number of winters in fresh water after hatching is followed by the number of winters in salt water. The fresh and salt-water winters are separated by a decimal point. To derive total age from the European system you must add the fresh and salt water winters and add one for the year of spawning. For example an age-1.3 chinook salmon's total age is 5 years; $1+3+1=5$.

Important subsistence and commercial fisheries in the Kuskokwim Area include herring and salmon. Other marine and freshwater finfish are harvested primarily for subsistence use. A list of indigenous fishes found in the Kuskokwim Area is provided in Appendix A.1.

PART I. SALMON FISHERY

Description of Area and District Boundaries

The Kuskokwim Area includes the Kuskokwim River drainage basin and all waters of Alaska that flow into the Bering Sea between Cape Newenham and the Naskonat Peninsula, plus Nunivak and St. Matthew Islands (Figure 1). Commercial salmon fishing occurs in four districts in the area:

District 1, the Lower Kuskokwim River, consists of the Kuskokwim River from a line between Apokak Slough and Popokamiut, upstream to a line between ADF&G regulatory markers located at Bogus Creek, about nine miles above the Tuluksak River (Figure 2). The downstream boundary has been in effect since 1986 and the upstream boundary was established in 1994 (Appendix A.2). In conjunction with the establishment of the District 1 Registration and Reregistration regulation (5 AAC 07.370), District 1 was subdivided into two subdistricts. Subdistrict 1A (or W-1A) consists of that portion of District 1 upstream from a line between regulatory markers located at the downstream end of Steamboat Slough to a line between ADF&G markers located at the mouth of Bogus Creek. Subdistrict 1B (or W-1B) consists of that portion of District 1 upstream from a line from Apokak Slough at 60° 08.50' N. lat., 162° 11.75' W. long. to the southernmost tip of Eek Island to the Popokamiut at 60° 04.00' N. lat., 162° 28.00' W. long. to a line between ADF&G regulatory markers located at the downstream end of Steamboat Slough.

District 2, the Middle Kuskokwim River, consists of the Kuskokwim River from ADF&G regulatory markers located at the upstream entrance to the second slough on the west bank downstream from Kalskag to the regulatory markers at Chuathbaluk (Figure 3). The downstream boundary of District 2 was used for the first time in 1990 (Appendix A.2).

District 4, Quinhagak, consists of the waters of Kuskokwim Bay between the mouth of Weelung Creek (misspelled in the regulations as Wheeling) and the South Mouth of the Arolik River (Figure 4). The northern boundary was new in 1990 and the first boundary change since 1960 (Appendix A.2).

District 5 consists of the waters of Goodnews Bay (Figure 5). The District 5 boundaries are a line between the northernmost tip of South Spit and the southernmost tip of North Spit, and a line between the mouth of Ukfigag Creek and the mouth of the Tunulik River.

The letter code assigned to the Kuskokwim Area by the Commercial Fisheries Entry Commission is "W". It precedes the district number on the figures and in news releases (e.g. W-1). This helps the public differentiate between announcements for the Yukon River districts (Y) and the Kuskokwim River (W) districts.

Fishery Resources

Five species of Pacific salmon are harvested by commercial and subsistence fishers in the area; chinook or "king" salmon (*Oncorhynchus tshawytscha*), sockeye or "red" salmon (*O. nerka*), coho or "silver" salmon (*O. kisutch*), pink or "humpy" salmon (*O. gorbuscha*), and chum or "dog" salmon (*O. keta*). The Kuskokwim River drainage has the largest populations of chinook, sockeye, coho and chum salmon in the area. Pink salmon occur throughout the area with significantly larger returns in even years than in odd years. Little quantitative data on the population size of pink salmon is available because of the lack of commercial markets and interest by subsistence fishers. There are no commercial fisheries for rainbow trout (*O. mykiss*), sheefish (*Stenodus leucichthys*) or Dolly Varden (*Salvelinus malma*) in the Kuskokwim Area. The contribution of non-salmon species to the overall subsistence fishery is not well quantified throughout the Kuskokwim Area. However, subsistence harvest estimates based on community specific harvest surveys have been developed for Kwethluk (Coffing 1991), Akiachak (Coffing 2000), Bethel (Coffing 2001) and Quinhagak (Wagner 1991). There is a growing sport fishery targeting salmon and resident freshwater fish (Minard et al. 1998).

Management

Management of the Kuskokwim Area salmon fishery is complex because of the difficulty in determining run size and timing, harvesting of mixed stocks, overlapping multispecies salmon runs, allocation issues, and the immense size of the Kuskokwim River drainage (Appendix B.1). The overall goal of the Kuskokwim Area research and management programs is to manage the salmon runs for sustained yield under policies set forth by the Alaska Board of Fisheries. Information is not adequate at this time to determine the escapement levels needed to produce maximum sustained yield. The Alaska State Legislature and the Alaska Board of Fisheries have designated subsistence fishing as the highest priority among beneficial uses of the resource (A.S. 16.05.258). Management of the Kuskokwim Area commercial salmon fisheries must take a conservative approach to maintain the subsistence priority, and to provide for spawning escapements to sustain production of the resource (Appendix A.3).

Most fisheries within the Kuskokwim Area harvest salmon stocks that are several weeks and hundreds of miles from their spawning grounds. As with most mixed stock fisheries, some individual stocks may be under harvested or over harvested in relation to their abundance. It is not practical, except in a very generalized sense, to manage the stocks separately based on current knowledge.

The management objective for chinook, coho and chum salmon in Districts 1 and 2 is to achieve desired escapement objectives (Appendix A.3) and allow for the orderly harvest of fish surplus to spawning requirements. Due to its importance as a local food source, chinook salmon receives special consideration to insure that the commercial fishery does not significantly impact the subsistence fishery for this species. Sockeye and pink salmon are not actively managed in Districts 1 and 2. The management objective for chinook, coho and sockeye salmon in Districts 4 and 5 is to achieve desired escapement objectives (Appendix A.3) and allow for the orderly harvest of fish surplus to spawning requirements. Chum and pink salmon are not actively

managed in Districts 4 and 5. Inseason management depends heavily on commercial catch data, test fisheries and run timing information. Run timing models are used inseason to predict the final escapement using the historical percentage of run passage for a particular date.

CF permanent full time staff assigned to the Kuskokwim Area includes one area management biologist, one area research biologist, two assistant area management biologists, two research project biologists and one program technician. In addition, approximately 25 seasonal employees are hired annually to assist in conducting various management and research projects. The staff aids in the enforcement of regulations in cooperation with the Department of Public Safety, Division of Fish and Wildlife Protection (FWP). Staff has also had increasing involvement with various non-profit groups and the United States Fish and Wildlife Service (USFWS) to develop and operate salmon escapement monitoring projects (Table 1).

SUBSISTENCE SALMON FISHERY

Background

The subsistence salmon fishery in the Kuskokwim region is one of the largest and most important in the state. During summer, early June through August, the day-to-day activities of many Kuskokwim Area households revolve around the harvesting, processing, and preserving of salmon for subsistence use. The seasonal movement of families from permanent winter communities to summer fishcamps situated along rivers and sloughs, continues to be a significant element of the annual subsistence harvest effort. Division of Subsistence studies in the region indicate that fish contribute as much as 85% of the total pounds of fish and wildlife harvested in a community annually, and salmon as much as 53% of the total annual harvest (Coffing 1991).

More than 1,700 households in the region annually harvest salmon for subsistence use. Many other households, which are not directly involved in catching salmon, participate by assisting family and friends with cutting, drying, smoking, and associated preservation activities (salting, canning and freezing). Annual subsistence harvest surveys have been aimed at gathering data on chinook, chum, sockeye, and coho salmon. Subsistence catches of chinook salmon in the Kuskokwim Area often exceed the commercial catch of this species (Appendix A.4).

There are 37 communities consisting of approximately 4,400 households within the Kuskokwim Area (Figure 1). The majority of the area households (3,330) are situated within the drainage of the Kuskokwim River. Bethel is the largest community in the region, containing approximately 1,700 households. Approximately 344 households are located in the northern Kuskokwim Bay communities of Kwigillingok, Kongiganak and Kipnuk. Residents of these three communities harvest subsistence salmon from the Kuskokwim River as well as from areas closer to the communities. Residents of Quinhagak, Goodnews Bay, and Platinum, located along the south shore of Kuskokwim Bay, harvest salmon stocks primarily from the Kanektok, Arolik, and Goodnews River systems. Residents of Toksook Bay, Nightmute, Tununak, Newtok, Chefornak

and Mekoryuk, situated near the Bering Sea Coast, harvest salmon from coastal waters as well as local tributaries.

Eligibility, Licenses, Permits, and Gear

Eligibility criteria require individuals to be Alaska residents for the proceeding 12 consecutive months before harvesting salmon for subsistence use. Prior to 1990 there were additional restrictions on participation in the fishery. These are described in earlier annual management reports. The vast majority of those individuals subsistence fishing for salmon in the Kuskokwim Area are residents of the area. People living in other parts of the state who have family or friends in the region sometimes return to the Kuskokwim area to harvest or help process salmon.

Licenses and permits have never been required for subsistence salmon fishing in the Kuskokwim Area, nor were any required during 2000. There were also no restrictions on the number of salmon that may be harvested by individual fishers or households. Salmon harvested for subsistence use may be caught using set and drift gillnets, beach seines, and fish wheels. In the Holitna, Kanektok, Arolik, and Goodnews river drainages only, spears may also be used. The total length of set or drift gillnets in use by an individual fisher may not exceed 50 fathoms. Unless changed by emergency order, gillnets used for harvesting salmon in the Kuskokwim Area may be of any size mesh. Gillnets with six-inch or smaller mesh may not be more than 45 meshes in depth and nets with greater than six-inch mesh may not be more than 35 meshes in depth. Fishers were required to have their name and address attached to their gillnets and fish wheels.

At their March 2000 meeting, the Board of Fisheries concluded action on a petition submitted by the Association of Village Council Presidents to include fishing with a line attached to a rod or pole and hand held lines as subsistence fishing gear. This regulation took effect in July 2000 for the entire Kuskokwim Area except for that portion of the Kuskokwim River drainage upstream of the Tatlawiksuk River. In addition, the Aniak River drainage upstream of Buckstock River was closed to the taking of chum salmon by subsistence hook and line gear. In the same area, the subsistence harvest of coho salmon with hook and line gear was allowed only until 31 August with a daily bag limit of one coho salmon. There were no salmon bag and possession limits in the remainder of the Kuskokwim Area.

InSeason Subsistence Closures

Areas within and adjacent to the commercial salmon fishing districts were periodically closed to subsistence salmon fishing 16 hours before, during, and 6 hours after commercial salmon fishing periods. The purpose of these closures is to discourage illegal commercial fishing and to help discourage the sale of subsistence caught salmon in the commercial fishery. Most of the commercial fishers are local residents who also participate in the subsistence fishery. The specific area closed to subsistence fishing varied from one district to the next.

In District 1, the waters of the Kuskokwim River were closed to subsistence salmon fishing around commercial salmon fishing periods as stated above. Tributaries flowing into the Kuskokwim River within the District did not close. That portion of the Kuskokwim River between Districts 1 and 2

was closed to subsistence fishing at the same time subsistence closures occurred in District 1. Kuskokuak Slough, located in District 1, did not close to subsistence fishing after 31 July.

In District 2, waters of the Kuskokwim River and all tributaries flowing into the Kuskokwim River within District 2 were closed to subsistence salmon fishing around commercial salmon fishing periods in District 2. In addition to subsistence closures in District 4 waters, the entire Kanektok and Arolik Rivers near District 4 were closed to all subsistence fishing with nets around the commercial salmon fishing periods in that district. Likewise, the waters of District 5 and the Goodnews River were also closed to all subsistence fishing by nets around the commercial periods in District 5.

During 2000, additional restrictions on the subsistence fishery in the Kuskokwim River drainage were implemented on 8 July. Following a commercial fishing period on 5 July, the ADF&G and the Federal Office of Subsistence Management restricted the subsistence fishery throughout the Kuskokwim River drainage. The restrictions required that gillnets must have 6-inch or less stretched mesh and limited individuals to a daily subsistence hook and line chinook bag limit of one chinook salmon.

SUBSISTENCE SALMON HARVEST SURVEYS

The management of Kuskokwim Area salmon fisheries requires that the Department know how many salmon are harvested in the subsistence, sport and commercial fisheries. Data on the subsistence harvest of salmon are collected annually. Commercial Fisheries Division began conducting subsistence salmon harvest surveys along the Kuskokwim River in 1960. Surveys were initiated in Quinhagak (1967) and Goodnews Bay and Platinum (1979). The Division of Subsistence took over the annual subsistence salmon harvest surveys in 1988 under a reimbursable service agreement and have been responsible for collecting and analyzing the data since then.

Methods

Three methods were used to gather subsistence salmon harvest data. These methods were:

- 1) subsistence salmon catch calendars,
- 2) postseason community household surveys,
- 3) postcard surveys,

The Subsistence Division maintains a community household database and updates this database annually during the community surveys. Each household in the database is designated as either "usually fish" or "does not usually fish" depending on past fishing history. Households listed in the database were the basis of sampling and estimation of subsistence salmon harvests for the

Kuskokwim Area. Each household on the list was assigned a unique identifier through which subsequent information could be tracked.

The goals of the postseason survey were to:

- 1) collect harvest data that would result in a total harvest estimate for subsistence salmon by species for the Kuskokwim Fisheries Management Area by community;
- 2) compile information on fishing effort, gear types, participation rates, and timing of the subsistence harvest;
- 3) update community household lists and identify fishing households;
- 4) determine if subsistence fishing success during 2000 was poor, average, or better than average and, if poor, why.

Catch Calendars

In May 2000, subsistence salmon catch calendars were mailed to all Kuskokwim Area households that had been identified as "usually fish." Three similar, but unique, catch calendars (Appendix S.1) were designed for recording the daily catch of each salmon species harvested for subsistence use. One style of calendar was sent to households in communities along the Lower and Middle regions of the Kuskokwim River, to communities along the Bering Sea coast and along North Kuskokwim Bay, and to those communities in the Upper Kuskokwim River region upstream as far as the community of Stony River. A second style of calendar was sent to the remaining households in the Upper Kuskokwim River region and a third style was sent to households in Quinhagak, Goodnews Bay, and Platinum. Differences in the style of calendar sent to households take into account the species available, salmon run-timing, and timing of subsistence fishing activities. Where mailing addresses were available, the calendars were mailed to post office boxes; otherwise calendars were sent general delivery for the post office clerk to distribute. Each calendar was postage paid and addressed for return to the Division of Subsistence office in Bethel. Subsistence salmon catch calendars were distributed to 1,768 households.

Household Surveys

The second method of collecting subsistence salmon harvest information was the postseason household surveys. With this method, staff traveled to communities in the Kuskokwim Area and went house-to-house interviewing residents about their 2000 salmon fishing efforts. Similar to the approach used in developing the catch calendars, three color-coded survey instruments were used to survey the majority of the communities (Appendix S.2). Except for local terms used for the salmon species, the survey questions asked in each region were identical. The survey form used when interviewing Bethel households also included a space for recording the households

resident address and asked reasons why the household harvested salmon for subsistence using hook and line gear.

During 2000, the Division of Subsistence staff conducted house-to-house surveys in 26 communities. Budget constraints have precluded attempts to conduct house-to-house surveys in Mekoryuk, Newtok, Nightmute, Toksook Bay, Tununak, Cheforak, and Telida. Staff was not successful getting to Oscarville, Stony River or Lime Village. House-to-house surveys were also not done in the communities of Kwigillingok, Kipnuk, and Kasigluk, because the communities asked us to stop doing surveys there several years ago. Through funding administered through the USFWS Office of Subsistence Management, the Orutsarmiut Native Council (ONC) located in Bethel, hired two survey technicians to assist the department in gathering data by conducting house-to-house salmon surveys in Bethel. This cooperative effort between the department and ONC resulted in a much better coverage of the Bethel community.

Survey efforts in these communities occurred over a two-month period, beginning in early October, after most residents had completed salmon fishing for the season and after most hunters had returned home from fall moose and caribou hunting. Communities in which residents usually harvest salmon through October were surveyed in November. Time spent in any one community ranged from one-half to two days depending on the size of the community. Surveys in Bethel were conducted over a 6-week period.

Survey work was conducted systematically. Prior to beginning the community surveys, efforts were made to inform and prepare residents for the arrival of staff doing the surveys. This was done weeks or days in advance of their arrival through letters to City, Tribal, or Traditional Council offices in each community, radio announcements, posters in public buildings and phone calls to community officials. Prior to traveling to each community, staff identified households that had already mailed in or returned their salmon harvest calendars.

In Bethel, survey staff used a map of the community originally developed by the Bethel Fire Department. This map identified the street addresses of much of the community and was used to divide the community into areas that could be assigned to each of the two survey staff. Each survey staff working in Bethel also had access to a list of all Bethel households identified through previous surveys and a list of households, which had been sent and returned their salmon fishing calendar.

Upon arrival in a community, staff checked in with the City or Council office to introduce themselves and outline their task. Staff used community household checklists, prepared in advance, to help them identify households they needed to contact while conducting household surveys. Each "checklist" contained a listing of all known households in the community, identified those households, which were reported to have subsistence fished for salmon the previous year (1999), and households, which were mailed 2000 catch calendars. Knowledgeable individuals in the community helped staff update the community household list and identify which households "usually fished" and which households "usually did not fish". These individuals also helped to identify households that subsistence fished for salmon in 2000.

Attempts were made to contact all households that were either identified as "usually fish" or were known to have fished during 2000. In Bethel, an effort was made to contact every household (a census) so that a more accurate list of the total number of households in Bethel could be established. Unlike the other communities, there was no one agency or organization that could provide a current Bethel household list. Structured interviews were conducted with these households through the use of the survey instrument. Subsistence salmon catch calendars that had not been mailed back to the department were also collected. If time permitted, other households on the community list were contacted about their salmon fishing activities. In 2000, 2,432 households were surveyed using this method.

Postcard Surveys

The third method of collecting information on subsistence harvest of salmon was through the use of postcard surveys (Appendix S.3). The postcard survey simply asked if the household harvested salmon from the Kuskokwim Area for subsistence use, the species and quantities harvested, the type of fishing gear used, and how fishing was for each of the four salmon species usually harvested. The postcard could be separated in half and returned postage paid to the department. This type of survey was the primary method of obtaining harvest data from households in Kipnuk, Kwigillingok, Kasigluk, Mekoryuk, Newtok, Nightmute, Toksook Bay, Tununak, Oscarville, Stony River, Lime Village and households in other communities, which were not available at the time of the community surveys.

Postcard surveys were also left at the doors of several occupied households in Bethel where multiple attempts to contact household residents failed. As a final effort to contact households in Bethel, those individuals for whom the department had a mailing list but were not contacted were also mailed a survey postcard. Overall 286 postcards were distributed to Bethel residents and 35 were returned completed. Many of the postcards were returned with an address correction indicating that the individual had moved away. If the address correction included a current address, a follow-up postcard was then sent to determine if the individual harvested salmon in the Kuskokwim Area during 2000. Overall, approximately 1,600 households were mailed postcard surveys.

Subsistence Salmon Harvest Estimation

Data from the three information sources (catch calendars, household surveys, and postcard surveys) were entered into a computer database. Data were verified against source documents, and several logic checks of the data were made. The master list of names and addresses of resident households was updated to reflect changes in household composition and number of households residing in each community. The unique household numbering system was maintained on the master list and on the database tables containing information from each of the three information sources.

In order to provide a single best estimate for a household's harvest of a salmon species during 2000, information was compiled from the various information sources. A single researcher conducted this process to ensure data consistency. In most cases, there were few discrepancies

between the information available from the different sources. In those cases where a household was known to have fished for salmon but their harvest could not be quantified through any information source, the household's harvest was estimated based on the mean harvest for the "usually fishes" strata. Likewise, if a household could not be contacted but was reported by a reliable source to not have fished, the household was assigned a harvest of zero.

Guidelines developed during the course of the process to composite harvest information included the assumptions that:

- (1) the salmon catch calendar contained the best means of recording the household's harvest;
- (2) information from the different sources needed to be evaluated concurrently in order to identify the harvest for each species;
- (3) information from the different sources for a particular species may be different due to the timing of the collection of this information;
- (4) information on the use of salmon to feed dogs be used as a minimum estimate of the household's harvest if no other information was available.

Salmon harvests identified as "removed from the commercial catch for subsistence use" were included in the household's subsistence harvest. The Bethel surveys did not include a question to specifically ask a household if they commercial fished for salmon during 2000. However, the Bethel survey did include a question format aimed at determining the amount of the subsistence harvest obtained from each gear type used, including those caught while commercial fishing. For the first time, the Bethel surveys also asked households the amount of non-salmon fish they had harvested during the preceding twelve-month period.

The average community catch (C_k) was estimated for salmon species from the composite catch per household data using the following formula:

$$C_k = \sum_{i=0}^1 (N_{ki} * C_{ki}) / \sum_{i=0}^1 N_{ki}$$

where

k = community

i = indicates whether the group "usually fishes" (1) or "usually does not fish"(0)

N_{ki} = number of households that "usually fish" or "usually do not fish"

C_{ki} = mean harvest for households that "usually fish" or "usually do not fish"

The total community catch (T_k) was estimated by $T_k = \sum_{i=0}^1 (N_{ki} * C_{ki})$ and its variance (V_k) includes a finite population correction factor:

$$V_k = \sum_{i=0}^1 ((N_{ki}^2)(1-(n_{ki}/N_{ki}))(s_{ki}^2/n_{ki}))$$

where n_{ki} = number of households for which information is available that "usually fish" or "usually do not fish" and s_{ki}^2 = variance for the amount harvested for the "usually fish" or "usually do not fish" households.

If fewer than 30 households or less than 50% of all households in a stratum in a community were contacted, the reported harvest was used for the estimated harvest. Community catch estimates and their variances were summed across communities for region subtotals and across all regions for Kuskokwim Management Area totals.

2000 Sampling Summary

A summary of the sampling information by community and fishing area is presented in Table 13. Of the estimated 4,441 households located in the Kuskokwim Area, information was obtained for 2,985 (67%).

In total 1,953 households have been classified as "usually fish." In 2000, subsistence salmon harvest information was collected from 1,574 (81%) of these households. Households classified as "usually do not fish" for salmon totaled 2,488. Information was collected from 1,176 (47%) of these households. Many (38%) of the households classified as "usually do not fish" resided in Bethel.

A total of 2,627 different households were contacted through the various survey efforts. In association with the households that were contacted directly, information about the fishing status of an additional 358 households was also obtained. An estimated total of 1,729 households harvested salmon for subsistence use during 2000.

Within the Kuskokwim River drainage (including North Kuskokwim Bay communities), 2,423 (66%) of 3,674 households living in the region were surveyed. Households that were determined not to have fished during 2000 were not targeted, however, some were contacted. This region contains 83% of the total households in the Kuskokwim Area and 91% of the subsistence fishing households.

In the South Kuskokwim Bay region, containing the communities of Quinhagak, Goodnews Bay, and Platinum, 145 (72%) of the 200 households living in the region were contacted. Of these contacted households, 126 (87%) harvested salmon in 2000 for subsistence use.

We estimate that there are a total of 567 households in the Bering Sea coast communities of Mekoryuk, Newtok, Nightmute, Toksook Bay, Tununak and Chefnak. A complete list of households was not available for these communities. Because house-to-house surveys were not conducted in these communities, data were obtained only by postcard surveys and calendar returns. Fifty-nine households in this region provided information and thirty-four reported harvesting salmon. Based on data gathered in other years, actual participation in salmon harvesting activities by households in this region is thought to be much greater than that reported by catch calendars or postcard surveys. For most communities, house-to-house surveys continue to be the primary

vehicle for gathering data on harvest and use of subsistence salmon. During the 2000 survey efforts, house-to-house surveys accounted for 92% of all households contacted.

Fourteen percent (253) of the 1,788 subsistence salmon calendars, which were mailed pre-season, were used and returned or picked up during the household surveys. There were 161 responses to the 1,605 postcard surveys mailed to Kuskokwim Area households.

2000 Harvest Summary

A summary of the subsistence salmon harvest estimates by community and fishing area is presented in Table 14. In 2000, the total subsistence salmon harvest estimates for the Kuskokwim Area were 68,841 chinook, 55,371 chum, 44,832 sockeye, and 35,670 coho salmon. Seventy-eight percent of the overall subsistence salmon harvests in the Kuskokwim Area were taken by residents of communities located from Tuluksak downstream to Eek.

Catches of chinook salmon from the Kuskokwim River drainage were down significantly during 2000. The 2000 subsistence Chinook harvest was about 20% below the 1990 – 1999 average of 83,000 fish. Chinook salmon are particularly sought after for subsistence use in the Kuskokwim Area and accounted for about a third (34%) of the total subsistence salmon catch.

The estimated sockeye harvest during 2000 (44,832 fish) was about average, although a little lower than the 1999 harvest (Appendix A.11). Subsistence harvests of both coho and chum salmon increased in 2000 compared to the harvest the previous year (1999). Both of these species have experienced a general decline since 1989 (Appendix A.12 and Appendix A.13). The harvest of 35,670 coho salmon in 2000 is 28% above the 1999 harvest, however, it is about equal to the previous ten-year average for this species (1990-1999: 36,832). The harvest of 55,371 chum salmon in 2000 was 23% below the previous ten-year average (72,222).

Overall, the subsistence salmon harvest during 2000 (all species combined) for the entire Kuskokwim Area was 16% below the average harvest from the previous ten years (1990-1999). Most notably, the chinook harvest was down more than 21% and the chum harvest was down by 29%. The most significant decline occurred within the upper region of the Kuskokwim River drainage for the communities of Crooked Creek upstream to Nikolai. This area had the lowest salmon harvest for each salmon species since at least 1989. In this region, the 2000 subsistence salmon harvest was more than 60% below the previous ten-year average. The chinook harvest was down by 53%, sockeye down by 49%, coho down by 61%, and chum salmon down by 72% in this section of the river. The subsistence salmon harvest in the lower Kuskokwim River (Eek to Tuluksak) was down by 10% for all species combined, relative to the 1990–1999 average harvest. Although the sockeye and coho harvest in the lower Kuskokwim River region increased during 2000, the chinook harvest was down 18% and the chum salmon harvest was down by 24%. The middle Kuskokwim region (Lower Kalskag to Chuathbaluk) saw a harvest that was 28% below the previous ten-year average. There the chinook harvest was down 31% and the chum harvest was 43% lower than the ten-year average. Salmon harvests in the Quinhagak area were down 26%, although the sockeye harvest was 14% above average. Harvests in District 5, Goodnews Bay and Platinum, were 7% better than the ten-year average.

Many fishing households provided information on the types of gear that they used for harvesting chinook salmon. Households often used multiple types of gear: set gillnets, drift gillnets, large mesh gear and small mesh gear. Drift gillnets were the gear type most commonly reported, particularly in the lower and middle Kuskokwim River areas (Table 15). Set gillnets were used throughout the region. Fishers in the Kuskokwim River drainage from Stony River upstream to Nikolai and communities in the Bering Coast area depended largely on set gillnets for harvesting subsistence salmon. No one reported using fish wheels during the 2000 surveys. Fish wheels are sometimes used by residents in Aniak and Stony River as well as in other middle and upper Kuskokwim River communities. Two households in Mekoryuk reported using a beach seine to harvest salmon. Several households (235) in 27 different communities throughout the region reported using rod and reel gear to harvest salmon for subsistence use.

On occasion, commercial fishers sometimes keep salmon caught during a commercial fishing period and take them home for subsistence use. During 2000, approximately 22% of the households which reported commercial fishing also reported that they kept salmon from their commercial catch for subsistence use (Table 16). This was twice the percentage from the previous year (1999). A total of 187 chinook salmon, 109 chum, 270 sockeye, and 515 coho salmon were reportedly retained from the commercial catch for subsistence use. The number of salmon retained from commercial fishing activities for subsistence use is usually relatively low.

Fishing households were asked to respond to a qualitative question about their subsistence salmon fishing for the season. The purpose of this question was to learn how households viewed their 2000 subsistence fishing success. Households were asked to rate their subsistence fishing success for each of the four species surveyed (Chinook, sockeye, chum, coho) as "Very Good," "Average," or "Poor". A total of 1,172 households provided responses to this survey question (Table 17).

Overall, 59% of households reported their subsistence chinook fishing success as very good or average. Fishers in the lower Kuskokwim river area and in Kuskokwim Bay had better success than residents in the middle and upper Kuskokwim region. Eighty percent of the responses by households located in the upper Kuskokwim region (Crooked Creek to Nikolai) were that subsistence fishing for chinook salmon was poor. Of all households that reported their fishing as poor, 61% indicated that a weak chinook run, or "few fish this year" or "most of the fish were small" as the reasons. Some felt that their low chinook catches were due to a combination of using a large meshed net and the chinook salmon being smaller than usual. Some households in the middle Kuskokwim reported that high water made fishing difficult. Some fishers in the lower Kuskokwim area felt that low water conditions, clear water and warm weather were responsible for their household's low chinook catches. Equipment problems, lack of time to subsistence fish because of wage employment and other personal reasons were also identified. Three households reported that the subsistence fishing restrictions put into effect during 2000 were the reasons.

In contrast, most of the responses relating to chum, sockeye, and coho salmon reported that subsistence fishing was very good or average. However, one exception to this was that 68% of the responses from the middle Kuskokwim region indicated that subsistence fishing for chum salmon was poor. A weak chum salmon run and few fish were the reasons most frequently given.

COMMERCIAL FISHERY

The Kuskokwim Area commercial salmon fishery dates back to the late 1800s. In the early years of the fishery, most of the commercial catch was sold locally for dog food (Oswalt 1990, Brown 1983). Salmon have been harvested in the Kuskokwim Area for export since 1913 (Pennoyer 1965). The current system of fishing districts, formerly called subdistricts, began in 1960 for the Kuskokwim River and District 4 (Appendix A.2). District 5 was established in 1968. The Kuskokwim River chum salmon fishery began in 1971 with gillnet mesh size restricted to 6 inches or smaller after 25 June. In Districts 4 and 5, gillnet mesh size has been restricted to 6 inches or smaller since formal inception of the districts. In 1985, the 6-inch maximum gillnet mesh size was applied to all Kuskokwim Area commercial salmon fisheries. The directed chinook salmon fishery in the Kuskokwim River was discontinued in 1987 (Appendix A.2).

Prior to 1983, a management strategy of conservatively increasing the commercial harvest guidelines to establish definite trends between catch and escapement allowed development of the fishery. Since changing from a harvest-guideline-based management strategy to an escapement-objective-based strategy in 1983, average harvests have generally increased (Appendix A.4). However, relatively low chinook salmon runs to Goodnews Bay and weak returns of Kuskokwim River chum and coho salmon in 1997, 1998 and 1999 may require special management measures in the 2001 through 2004 return years to meet escapements.

Coho salmon are the most important species in the commercial fishery both in terms of harvest numbers and value to the fishers. The commercial fisheries in all four districts target coho in late July and August. Chum salmon are usually second in importance being the target species in the Kuskokwim River fisheries in June and July. In most years, sockeye salmon are the third most commercially important species with directed fisheries in Districts 4 and 5. Chinook catch and value ranks fourth with the only directed commercial fishery on this species occurring in District 4. Pink salmon are the least numerous and least valuable species in the commercial fishery.

Public Communications

Communicating management plans and decisions to the public is often challenging because many people in the Kuskokwim Area speak only Yupik, or English as a second language. Special regulation notices are broadcast over local radio stations, VHF and CB radio in English and Yupik. The department and the Kuskokwim River Salmon Management Working Group (Working Group) relationship has dramatically improved the acceptance and understanding of fisheries management by many users. The Department participates in school and workshop programs in the winter. News releases are now more widely distributed through a computerized FAX and e-mail system.

Commercial Fishery Data

Catch per unit of effort (CPUE) is used in this report to describe the relative success of fishing and as an index of abundance. Commercial CPUE is the number of fish caught during a fishing period divided by the product of the number of unique CFEC permits used in a fishing period and the total number of hours the district was open to commercial fishing.

Computer tabulations of fish tickets provide the commercial catch data presented in this report. The computer software program is a statewide system provided by the Commercial Fisheries Division Computer Services section.

The commercial fishery has expanded during the last 15 years (Appendix A.5). This expansion is due to increased participation by individual fishers and improvements in fishing gear, tendering, and processing capabilities, and a shift to escapement based management. In 1995, a record 829 of the 840 permit holders made at least one landing (Appendix A.6). Since 1989 and 1990, when 824 permit holders fished, the number of active permits had declined slightly until 1995 (Appendix A.6). Since 1995, the number of participating permit holders has decreased considerably due primarily to a significant drop in the prices paid for salmon.

Appendix A.5 shows that permit-hours peaked in 1975; probably due to the impending limited entry permit moratorium. Since that time, maintaining adequate subsistence harvests and spawning escapements have required reductions in fishing time. Fishing efficiency has increased, as the increase in harvest (Appendix A.4) and the decrease in permit-hours (Appendix A.5) shows. Improved run strength, escapement based management, and increased participation resulted in permit-hours stabilizing to around 100,000 from 1987 to 1995 (Appendix A.5). In 2000, permit-hours were 65% below the most recent 10-year (1990-1999) average in Districts 1 and 2 because of limited fishing time due to the very weak chum salmon run and lower participation caused by low prices. Permit-hours were 46% below average in District 5 and 36% below average in District 4 primarily due to low prices and a poor coho run.

Commercial fishing regulations set maximum gillnet specifications of 6-inch or smaller mesh, 50 fathoms in length and 45 meshes in depth for all districts (ADF&G 1985). Fishing periods in Districts 1 and 2 are usually six hours in duration from 1:00 p.m. until 7:00 p.m., as required by the management plan. Longer fishing periods generally divide the extra time before 1:00 p.m. and after 7:00 p.m. In Districts 4 and 5 fishing periods are normally 12 hours in length. Fishers in those two districts prefer daylight fishing hours so the periods are normally 9:00 a.m. until 9:00 p.m.

Adjustments of the number and duration of commercial fishing periods and time intervals between periods are the primary methods of distributing the harvest throughout the run. This helps to avoid over harvesting discrete stocks, achieve biological escapement goals (BEG), and allows sufficient fishing time for the subsistence fishery. In 2000, commercial fishing periods varied between 4 and 12 hours in length depending on the district, species, effort, run magnitude and processing capacity. Run magnitude is assessed by commercial and subsistence catch data

and by various department, non-profit organization, United States Fish and Wildlife Service (USFWS) and industry sponsored projects.

At their March 2000 meeting, the Alaska Board of Fisheries adopted an Agenda Change Request submitted by the fish processor, Arctic Salmon, to establish a District Registration and Reregistration system for District W-1. This new regulation divides District W-1 into two subdistricts; Subdistrict W-1B, downstream of Bethel and Subdistrict W-1A, upstream of Bethel. The primary purpose of this regulation was to reduce the magnitude of the commercial harvest during a single fishing period in District W-1 when processing capacity was inadequate to handle the harvest from a full-district opening. If processing capacity is limited, only one subdistrict will open to commercial fishing at a time. Fishers must choose which subdistrict they will fish in and cannot fish in the other subdistrict without first contacting the Alaska Department of Fish and Game.

Permit holders are automatically registered to fish in the subdistrict where they make their first delivery of the season. After contacting the department and declaring their intent to transfer to the other subdistrict, they cannot fish commercially for 48 hours. The number of transfers between subdistricts of District W-1 was limited to one in June and July and one in August. This regulation did not limit the ability of permit holders to transfer freely between District W-1 and Districts W-4 and W-5.

Another new regulation and modification of another regulation were also adopted because they were necessary to implement the district registration regulation. The regulation describing the boundaries of District W-1 (5 AAC 07.200. FISHING DISTRICTS) was modified. District W-1, Lower Kuskokwim River, was divided into two registration areas, W-1B (below Bethel) and W-1A (above Bethel). The new regulation adopted by the Board (5 AAC 07.340. VESSEL IDENTIFICATION) required permit holders to identify their fishing vessel by permanently marking their ADFG vessel license or CFEC entry permit number on both sides of the vessel.

Kuskokwim Area fishers owned 97% of the 811 commercial permits renewed in 2000 (excluding educational permits held by local schools) while non-local Alaskan residents owned 3% (23). Non-residents owned only 4 permits (Table 2).

SPORT FISHERY

In 2000, the Sport Fish Division established the Lower Yukon-Kuskokwim Management Area and stationed an Area Management Biologist in Bethel. This person manages all sport fisheries from the Goodnews River to and including the Aniak River drainage on the mainstem Kuskokwim. The Sport Fish Division in Fairbanks manages the remaining Kuskokwim River drainages. Overall, sport fishing activity and harvest in the Kuskokwim Area is relatively low, but growing. The number of angler-days in Kuskokwim Bay and lower Kuskokwim River streams (downstream of and including the Aniak River drainage) has increased from 11,358 in 1985 to 21,247 in 1997 (Minard et. al. 1998). Estimates of angler-days for all Kuskokwim Area drainages in 1999 total 26,712 (Lafferty 2001, Burr 2001). Moderate sport fishing activity

occurs in the Kanektok, Goodnews, Kisaralik, Kwethluk, Aniak, and Holitna Rivers, which account for the majority of the angler-days in the Kuskokwim Area.

ESCAPEMENT MONITORING AND ASSESSING RUN ABUNDANCE

The vast size, remoteness and geomorphic diversity of the Kuskokwim Area present tremendous challenges to monitoring salmon escapements and assessing salmon run abundance. Aerial spawning ground surveys have been the most cost-effective means of monitoring salmon escapements, but their usefulness and reliability are limited. Aerial survey assessment is subject to a high degree of variability depending on viewing conditions and the person doing the surveys. The more thorough and rigorous ground based projects such as weirs, counting towers and sonar have been operated in only a few locations because of costs and limited budgets. Over the past few years, however, the number of weir projects in the Kuskokwim Area has increased through cooperative partnerships with federal agencies and local organizations (Table 1). These cooperative efforts have added substantially to our ability to monitor salmon escapements and to evaluate the effectiveness of inseason management actions.

Salmon managers require timely assessments of run abundance in order to effectively manage commercial and subsistence fisheries without jeopardizing escapement needs. Within the Kuskokwim River, escapement projects have limited usefulness for inseason management because of the great distances between the areas of harvest and the location of escapement projects. It may take weeks for salmon to travel between these locations. Consequently, managers in the Kuskokwim River rely on a variety of inseason indicators to assess run abundance including test fisheries, commercial catch statistics and informal reports from subsistence and sport fishers. In Kuskokwim Bay, the escapement monitoring projects are a short distance from the commercial fishing districts, so escapement data can have a more direct inseason application. Kuskokwim Bay managers also make extensive use of commercial catch statistics and information from subsistence fishers.

Aerial Surveys

Many of the escapement goals established for Kuskokwim Area streams in 1983 were based on aerial surveys (Buklis 1993). The aerial survey based escapement goals of the Kuskokwim Area do not represent the entire spawning populations in the respective streams. The surveys are mostly conducted one time each season during a window of a few days when the maximum number of fish are expected to be on the spawning grounds. The escapement goals developed from these surveys are based on the raw, unexpanded counts; therefore, each count serves as an index of abundance rather than a complete census.

Aerial surveys are ordinarily restricted to clear water streams and lakes, the distribution of which is geographically skewed towards the lower Kuskokwim River basin and coastal streams. Tributaries in the middle and upper Kuskokwim River are oftentimes stained from organics or clouded by glacier runoff, both of which markedly reduce the visibility of fish. The list of streams with

escapement goals reflects historically the uneven geographic distribution of escapement monitoring (Appendix A.3).

In most cases, aerial surveys are best used to index spawning populations of sockeye and large chinook salmon because these fish are more visible. Some streams do have aerial survey-based escapement goals for chum salmon (Buklis 1993), but these are of questionable usefulness because of protracted run timing and the low visibility of chum salmon on the spawning grounds. A few streams also have escapement goals for coho salmon, but weather conditions seldom allow reliable aerial surveys to be flown for indexing coho salmon escapement.

Ground Based Escapement Assessment

Weirs and sonar projects operated in the Kuskokwim Area allow estimation of entire spawning populations, or major segments of those populations. Seven such projects were operated in the Kuskokwim Area in 2000 (Figure 1). Two of the projects have escapement goals associated with them, but only one, the Kogrukluk River weir, has an escapement goal for coho salmon (Appendix A.3). Most of the escapement goals are based on the average annual escapements at each site through about 1983 (Buklis 1993). BEG's are periodically reviewed and may be modified when appropriate. Such a review will be conducted prior to the January 2001 Board of Fisheries meeting (Burkey, et al. 2000a and 2000b). Other information collected at ground based projects may include salmon sex and length composition, scales for age determination, statistics on the occurrence of gillnet marks on fish, genetic stock identification sampling, information on resident species, and habitat monitoring.

Kuskokwim River

Kogrukluk River Weir

The Kogrukluk River is a middle Kuskokwim River tributary located in the upper reaches of the Holitna River drainage (Figure 1). The Department has operated a weir on the Kogrukluk River since 1976 to monitor passage of chinook, sockeye, chum and coho salmon (Cappiello 1998a). The escapement goal for each of these species is 10,000, 2,000, 30,000 and 25,000 fish, respectively. Sockeye are considered incidental at the site, but since the project was first established the annual trend has been towards increasing sockeye abundance (Appendix A.7). In fact, annual sockeye passage sometimes exceeds the abundance of other species. The Kogrukluk River weir is the only project in the Kuskokwim Area where coho escapement is regularly monitored. Operations in 2000 allowed for nearly full coverage of the salmon runs.

A counting tower operated on the Kogrukluk River from 1969 through 1976 was the earliest ground based escapement monitoring projects in the Kuskokwim Area (Yanagawa 1972a, and 1973, Kuhlmann 1973, 1974, 1975; Baxter 1976 and 1977). The Department first tried to weir the river in 1971, but was unsuccessful (Yanagawa 1972b). Both the tower and the 1971 weir site were located several miles upstream of the current weir project. The early projects were also upstream of Shotgun Creek, a productive salmon spawning area. The current weir site is downstream of Shotgun Creek.

Travel time for chum and coho salmon from the upper end of District 1 to the weir is estimated at about 25 days based on tagging studies conducted in the early 1960s (ADF&G 1961a and 1962a). Inseason escapement projection models have been developed to estimate the end-of-season escapements (Cappiello 1998), but their usefulness is generally limited because of variability in salmon entry patterns.

Aniak River Sonar

The Aniak River is located in the lower Kuskokwim River basin and is believed to be one of the largest producers of chum salmon in the Kuskokwim Area (Figure 1). Non-configurable sonar equipment was used from 1980 through 1995. A transducer was deployed from one bank and passage in the unensonified section of the river was estimated using an expansion factor (Schneiderhan 1989). Results from the 1995 operations were considered unusable because of abnormalities in the operation that could not be resolved (Burkey et al. 1996b). The problem was associated in part to limited crew experience, but also at fault was the lack of documentation inherent with non-user configurable sonar. In 1996 the project was redesigned to take advantage of user-configurable sonar technology (Vania 1998). At the same time the project was relocated about a mile downstream where a transducer was deployed from each bank to allow full channel ensonification. Since 1996, the Association of Village Council Presidents has provided a technician to assist in field operations of the user configurable sonar.

The sonar passage estimates for the Aniak River include a mix of species, however the operating period typically focuses on a time span from late June through late July when the majority of fish passage is believed to be chum salmon. This assumption has generally been confirmed through periodic gillnetting activities (Schneiderhan 1989, Vania 1998). During the first few years of operation, fish passage was apportioned to chum and chinook salmon using the proportion of each species caught in gillnets (Schneiderhan 1981, 1982a, 1982b, 1984c). Species apportionment was discontinued after 1986 because of inadequate sample sizes, gillnet selectivity problems and the perceived dominance of chum salmon (Schneiderhan 1989).

The escapement goal for Aniak River sonar is 250,000 fish counts (Buklis 1993). Area biologists derived the goal subjectively in the early 1980s by relating the sonar passage estimates to trends in harvest and other escapement indices (Schneiderhan 1984c). In the years that followed, periodic consideration of the escapement goal provided no compelling reason to change the goal. The escapement goal of 250,000 fish has been carried forward to the redesigned sonar project, but it will be reassessed as more information is gathered.

The travel time for chum salmon from the upper end of District 1 to the Aniak River sonar site is estimated at about 7 or 8 days based on tagging studies (ADF&G 1961a and 1962a).

Other Kuskokwim River Escapement Projects

A number of other escapement projects have been operated periodically in the Kuskokwim drainage. The most intensive efforts occurred in the past few years through cooperative efforts with the USFWS, the Bering Sea Fishermen's Association (BSFA) and other organizations. Cooperative escapement projects were operated in 2000 on the Takotna, George, Tatlawiksuk and Kwethluk Rivers through partnerships with Iditarod Area School District, Kuskokwim

Native Association, Kwethluk Traditional Council, and USFWS (Figure 1). These groups received federal funding through grants obtained by the BSFA, Bureau of Indian Affairs (BIA), the Federal Office of Subsistence Management (OSM), the National Marine Fisheries Service (NMFS), and the National Fish and Wildlife Foundation (NFWF). The Department and USFWS worked jointly to provide varying levels of support to each project ranging from an on-site crew leader to equipment and technical guidance.

The first of these cooperative escapement projects was established on the Takotna River in 1995 when the Iditarod Area School District, in consultation with ADF&G, began a salmon counting tower, which operated with mixed success (Molyneaux et al. 2000). The tower project was replaced by a resistance board weir in 2000 and successfully operated to enumerate chinook, chum and coho salmon. The weir project was developed and operated through funding from BSFA and NMFS (Schwanke et al. 2001).

The George River weir began operations in 1996 through the collaboration of KNA and ADF&G with funding provided by BIA, BSFA and NMFS (Molyneaux et al. 1997b). The initial fixed panel weir design was replaced with a resistance board weir in 1999. The project is used to monitor escapements of chinook, chum and coho salmon.

Following their success on the George River, KNA and ADF&G began the Tatlawiksuk River weir in 1998. Again, the initial fixed panel weir design was replaced with a resistance board weir in 1999 and the project is used to monitor escapements of chinook, chum and coho salmon. Most of the start-up and operational cost in the first year was provided by grants with NFWF and NMFS with additional support from BSFA. In 2000, OSM began contributing to the operational costs in place of the one-year grant with NFWF.

Salmon assessment on the Kwethluk River has had a more convoluted history. The USFWS operated a resistance board weir on the river in 1992, but discontinued the project after the first season because of concerns from Kwethluk community members (Harper 1998). From 1996 to 1999 the Association of Village Council Presidents worked with Kwethluk Traditional Council and ADF&G to operate a salmon counting tower on the river through funding from BSFA and NMFS, but success was limited and the project was discontinued (Cappiello and Sundown 1998, Chris and Cappiello 1999, and Hooper 2001). The USFWS joined with Kwethluk Traditional Council and ADF&G in 2000 to reinstate the resistance board weir downstream of the original site. The weir was successfully used to enumerating chinook, chum, sockeye, pink and coho salmon. Funding for the weir has been from BSFA, OSM and NMFS.

Other escapement monitoring projects operated in the Kuskokwim River basin over the years include: South Fork Salmon River weir in 1981 and 1982 (Schneiderhan 1982b, 1982d), experimental sonar deployment in the Kwethluk and Kasigluk Rivers in 1978 and 1979 (Schneiderhan 1979, 1980), and resistance board weirs on the Tuluksak Rivers from 1991-1994 (Harper 1995a, 1995b, 1995c, 1997), which was operated by the USFWS. All of these projects were discontinued due to funding shortages, technical limitations, or lack of local support.

District 4

Kanektok River Weir

The Kanektok River is the main spawning stream in District 4 (Figure 1). Historically, aerial surveys have been the primary means of assessing salmon escapements in the river. An experimental counting tower was initiated with little success in the lower Kanektok River in 1996 (Fox 1997). The project was operated through a cooperative effort between Quinhagak IRA and ADF&G, with support from BSFA, USFWS and the Bureau of Indian Affairs (BIA). Improvements were made to the tower operation in 1997 (Menard and Caole 1999). The changes, coupled with near record low water levels, allowed for moderate success in enumerating chinook, sockeye, chum and pink salmon, however, reliable species identification was difficult. Water levels in 1998 returned to a more average to above average range in the Kanektok River and the tower was essentially inoperable. The counting tower was not operated in 1999, instead resources were directed to the development of a resistance board weir for the Kanektok River. Crews attempted to install the weir in 2000, but high water coupled with site instability, and problems with the weir panel fabrication hampered operations.

Counting towers and non-configurable sonar equipment have been used in the past to estimate salmon escapement in the Kanektok River, but these projects were discontinued due to site limitations, technical obstacles and budget reductions (tower: ADF&G 1960, 1961b and 1962b; sonar: Schultz and Carey 1982, Schultz and Williams 1984, Huttunen 1984c, 1985c, 1986a, 1988).

District 5

Middle Fork Goodnews River Weir

The Goodnews River is the primary salmon spawning stream in District 5. Salmon escapements are assessed in the drainage by means of aerial surveys and a weir on the Middle Fork Goodnews River (Figure 1). The weir is located about 15 miles from the eastern boundary of the commercial fishing district allowing for timely assessment of salmon escapement as needed for fishery management (Menard 1998). A fixed picket weir design was employed from 1991 to 1997. Use of a counting tower preceded the weir from 1981 through 1990 (Burkey 1990). The weir and tower projects monitored passage of chinook, sockeye and chum salmon. The escapement goals are 3,500, 25,000 and 15,000 fish, respectively (Buklis 1993). The salmon spawning populations of the entire Goodnews River drainage are estimated postseason based on the proportion of fish seen during aerial surveys relative to weir passage (Menard 1998).

Like most Kuskokwim Area streams, assessment of coho salmon in the Goodnews River is problematic because of the high stream flows that often occur during the coho season. The problem was addressed in 1997 through the aid of the USFWS and BSFA who facilitated the purchase, fabrication and installation of a resistance board weir (Menard 1998). The resistance board weir replaced the fixed picket weir about mid-summer in 1997 and for the first time salmon enumeration continued through coho season. The resistance board weir allowed for nearly full coverage of the salmon runs in 1998 and again operated with little interruption in 1999 and 2000. The late August and September operation was again funded through a grant from the USFWS.

Salmon Run Strength Assessment

Salmon managers require timely inseason assessment of salmon run abundance. In the Kuskokwim River, escapement projects provide limited usefulness in this regard because of the great distances between the areas of harvest and the project locations. Consequently, managers rely on test fisheries, commercial catch statistics, and informal reports from subsistence and sport fishers to augment escapement data.

In Kuskokwim Bay the escapement monitoring projects are much closer to the commercial fishing districts, so escapement data can be effectively used for inseason management. Kuskokwim Bay managers also make use of commercial catch statistics and information from subsistence and sport fishers. Catch statistics are especially important in District 4 where reliable escapement monitoring has been historically lacking.

Bethel Test Fishery

Daily inseason assessment of Kuskokwim River relative salmon run strength and timing is available from a drift gillnet test fishery operated near Bethel. The Bethel test fishery is located at river mile 80 of the Kuskokwim River, which is about the midpoint of District 1 (Figure 2). The project began in 1984 and the methodology has remained largely unchanged (Molyneaux 1999). From early June through late August the test fish crew conducts three or four systematic gillnet drifts beginning one hour after high tide. The drifts are done at three stations distributed across the width of the channel. Each drift is 20 minutes in duration. Two 50 fathom gillnets are used, one net is hung with 5-3/8-inch mesh web and the other with 8-inch mesh. The two gillnets are rotated between the three stations following a systematic schedule. Both mesh sizes are operated from early June through about 10 July when chinook, sockeye and chum salmon all occur in relatively good abundance. The 8-inch mesh is discontinued after about 10 July when chinook abundance is low. Test fishing with the 5-3/8-inch mesh continues until late August.

The test fish catch from each tide is tallied by species then sold to a local fish buyer or distributed to charities. Catch statistics for chinook, sockeye, chum and coho salmon are presented as daily catch-per-unit-effort. Comparisons are made with test fish results from previous years to assess relative abundance and run timing. The comparisons are subjective in that managers need to consider variables such as water level, fishing patterns and changing river morphology when comparing data from between years, and even within years.

Historically, other test fisheries have been attempted in the Kuskokwim River: Kwegoooyuk test fishery, 1966 - 1983 (Baxter 1970, Huttunen 1984b); Eek test fishery, 1988 - 1994 (unpublished); Kuskokwim River subsistence test fishery, 1988 - 1990 (Kuskokwim Fisherman's Cooperative, 1991); Aniak test fishery, 1992 - 1995 (unpublished); Chuathbaluk test fishery, 1992 - 1993 (unpublished); and the Lower Kuskokwim River test fishery, 1995 (unpublished). Most of these projects were initiated at the prompting of groups other than ADF&G. They were all eventually discontinued for a variety of reasons including lack of funding, problems with consistency, difficulties with catch disposition, and ambiguous results.

Commercial Catch Statistics

Comparison of commercial catch statistics is another common method for assessing run strength. However, the usefulness of this approach can be confounded by inconsistencies in the number of participating fishers, the duration of commercial fishing periods and other variables that might influence catch or the effort applied by fishers. The practicality of this approach is limited, in years of low run abundance, because of the consequent fish mortality.

Subsistence and Sport Fish Information

Throughout each season staff keep in close communication with subsistence and sport fishers to assess their fishing success and the degree to which their needs are being met. These catch reports sometimes play a pivotal role in management decisions. In 2000, Orutsararmiut Native Council began conducting inseason surveys of subsistence fishers as well and reporting the information to ADF&G and the Kuskokwim River Salmon Management Working Group through a grant from the Federal Office of Subsistence Management.

Kuskokwim River Sonar

The department began developing a user-configurable sonar project in 1988 for deployment in the mainstem of the Kuskokwim River near Bethel (Mesiar et al. 1994). That project became operable in 1993, but shortages in technical support and the restructuring of the Regional sonar program precluded its operation after 1995. Since 1995, the original sonar site has degraded and has been deemed unusable. Two sloughs that bypass the site have enlarged enough to possibly allow significant salmon migration. This could compromise salmon passage estimates at the old site. As part of the Regional sonar rebuilding program, staff conducted limited site surveys in 1998. A redesigned sonar project began development in 1999 at a new site located 16 miles upriver of Bethel. Development has been suspended indefinitely due to continued staffing difficulties and technical challenges.

SEASON SUMMARY

The 2000 Kuskokwim Area salmon season opened by emergency order with a period in District 4, on 15 June. The salmon season closed by regulation on 8 September following the final fishing period in Districts 4 and 5 on 24 August.

Extremely poor runs of chinook, and chum salmon, coupled with low prices resulted in the Kuskokwim River drainage being declared an economic disaster area for the third time since 1997 by the State and/or Federal governments. The exvessel value of commercial salmon sales in 2000 was 64% below the most recent 10-year average (1990-1999) (Appendix A.6). In 2000, 493,084 salmon were sold in the Kuskokwim Area. The catch was composed of 26,115 chinook, 109,939 sockeye, 307,439 coho, 17 pink and 49,574 chum salmon (Table 3). The 2000 estimated salmon harvests compared to the recent 10-year averages were as follows: chinook,

44% below, sockeye, 32% below, coho, 44% below, pink, 99% below² and chum 85% below average (Appendix A.4). The commercial harvest of chum was the lowest since 1968.

The department sold 64 chinook, 413 sockeye, 2,828 coho, 9 pink, and 1,038 chum salmon from the Bethel test fishery. These fish were not included in the commercial sales. The receipts from these sales were used to help fund operating cost of the test fishery.

In 2000, 623 of the 832 Kuskokwim Area permit holders made at least one landing (Appendix A.6). This was the second lowest number of permit holders fishing in the Kuskokwim Area since 1972. Commercial fishing effort, measured by permit-hours, was only 52% of the most recent 10-year average (Appendix A.5).

The average prices paid per pound were extremely low (Appendix A.8). Chinook salmon were worth an average of \$0.39 per pound, \$0.07 below the 10-year average. Likewise, sockeye salmon were worth \$0.55 per pound, which was \$0.10 below average. The price for coho salmon of \$0.28 per pound was \$0.15 below average and the second lowest since 1974. Pinks brought \$0.10 a pound, slightly below the average price of \$0.11. The \$0.10 per pound paid for chum salmon was \$0.11 below average and the lowest since 1972.

Kuskokwim Area permit holders received \$1,197,149 for their catch, excluding bonuses and other incentives not reported on fish tickets. Salmon buyers and processors operating in the Kuskokwim Area during 2000 are listed in Table 5. The value of the catch was 64% below the previous 10-year average of \$3,368,180 (Appendix A.6). The average income per permit holder was \$1,922, the third lowest on record and 65% below the 10-year average of \$4,261.

Kuskokwim River (Districts 1 and 2)

The Working Group, comprised of representatives from several Kuskokwim River salmon user groups, continued to work closely with the department in 2000. Through uncommon dedication by all the concerned parties, the Working Group provided inseason management recommendations that served as a cooperative approach to management of the Kuskokwim River salmon fisheries (Table 4). During the season, the Working Group met 15 times to evaluate the status of the salmon runs and make recommendations to the department.

The 2000 preseason outlook was for a below to near average chum salmon run. The return of five-year-old fish was expected to be below average based on the poor return of four-year-old fish in 1999. The return of four-year-old chum salmon was expected to be average to above average based on good parent-year escapement in 1996. Overall, the 2000 commercial harvest of chum salmon was expected to be below average to average, ranging from 50,000 to 300,000 (Burkey et al 2000b).

The 2000 Kuskokwim Area commercial fishery was processing capacity limited. With only one company operating, processing capacity was much lower than in previous years with an ability to

² Even years only.

process 150,000-200,000 pounds of salmon per day compared to a normal capacity of approximately 400,000 pounds per day. Historically, a commercial opening in District W-1 often produced more than 600,000 pounds of fish. Harvests in 2000 had to be limited to a maximum of 400,000 pounds of fish per opening to assure acceptable product quality and avoid wastage. As another means to cut operating costs, the tendering fleet was reduced approximately 50% from historical levels. This allowed for tendering capacity adequate to cover only half of District W-1 during a commercial period.

During the 2000 fishery, subsistence fishers reported mixed success in harvesting chinook salmon with some fishers reporting good catches and other fishers reporting relative few fish. Several fishers in the lower Kuskokwim River indicated that more fishing effort was necessary to catch adequate amounts of chinook salmon. Inseason reports from subsistence fishers in the middle and upper Kuskokwim River drainage also indicated very poor chinook catches and a weak run. Subsistence chum catches were reported poor throughout the drainage, however, catches of sockeye and coho salmon were reported as adequate or strong. Several subsistence fishers from throughout the drainage reported that they expended more than the usual amount of effort to catch the salmon they needed. Some families stopped fishing for chinook and chum salmon when it became apparent that the costs and effort expended were not economic or in order to conserve salmon needed for escapement. Many subsistence fishers in the middle and upper Kuskokwim River reported increasing their harvest of coho salmon to make up for a lack of chinook and chum salmon harvests. Kuskokwim Bay subsistence fishers reported that their harvests were adequate.

After a meeting of the Alaska Board of Fisheries on 8 July, an emergency regulation was adopted which restricted the subsistence fishery in the Kuskokwim River drainage to the use of 6-inch or less mesh gillnets and limited rod-and-reel subsistence fishers to one chinook per day in order to conserve chinook salmon. The Federal Office of Subsistence Management (FOSM) also adopted these regulations for federal waters under their jurisdiction. The sport fishery for chinook salmon was also closed in the Kuskokwim River drainage. On 12 July, a cooperative appeal for Kuskokwim River drainage subsistence fishers to conserve chinook salmon was issued by the Alaska Department of Fish & Game, Association of Village Council Presidents, Kuskokwim Native Association, Kuskokwim River Salmon Management Working Group, Kwethluk IRA Council, McGrath Native Village Council, Tanana Chiefs Conference, and the U.S. Fish and Wildlife Service. Chinook salmon returns appeared to be adequate in Kuskokwim Bay districts, so no restrictions occurred in those fisheries.

In 2000, there were 13 commercial fishing periods (two 4-hour and eleven 6-hour) in District W-1 of the Kuskokwim River for a total fishing time of 74 hours. Seven of these periods took place in Subdistrict W-1B (the lower half of District W-1) and five periods occurred in Subdistrict W-1A (the upper half of District W-1). The first two periods were 4 hours long and only Subdistrict W-1B was open. The remaining 11 periods were 6 hours long. Both subdistricts were open during the last commercial period. A total of 444 chinook, 4,130 sockeye, 11,570 chum, 7 pink, and 259,703 coho salmon were harvested in the 2000 District W-1 commercial fishery (Table 6). Total exvessel value of the catch was \$514,929, only 23% of the previous 10-year average exvessel value (Table 3). The proportion of the total harvest taken in Subdistrict W-1B was 91%

chinook (404 fish), 98% sockeye (4,048 fish), 99% chum (11,425 fish), and 44% coho salmon (115,086 fish) (Table 7). The total exvessel value of the District W-1 fishery was \$242,000 (47%) from Subdistrict W-1B and \$273,000 (53%) from Subdistrict W-1A.

A total of 532 permit holders participated in the commercial fishery in District W-1 (Table 6). Four-hundred-nine permit holders made deliveries in Subdistrict W-1B and 238 permit holders delivered in Subdistrict W-1A. Between 1 August and 18 August, 95 permit holders transferred from Subdistrict W-1B to Subdistrict W-1A. Eighty-three (83%) of these transfers occurred before 7 August. No permit holders transferred from Subdistrict W-1A to Subdistrict W-1B.

There were two 6-hour commercial fishing periods in District W-2. Both of these periods occurred during the coho salmon fishery in August. Four permit holders harvested a total of 1,676 coho and 1 chum salmon (Table 1). Total exvessel value of the catch was \$3,039, only 4% of the previous 10-year average exvessel value (Table 3). There were no tenders available in District W-2 so fishers had to run from 60 to 90 miles down river to deliver their fish.

The first opener in 2000 was 4 hours long from Bethel down (Subdistrict W-1B) on 5 July. This was the latest opening date on record for the Kuskokwim River commercial fishery due to the extremely poor return of chinook salmon. Only Subdistrict W-1B was opened in order to minimize the incidental harvest of chinook salmon. The harvest of chinook and chum salmon was the lowest number on record for that time period. Index numbers for chum salmon from the Bethel test fishery (BTF) showed an increasing trend for the week prior to the opener, but after the opener index numbers plummeted and stayed at low levels. No further commercial openings occurred until 1 August, primarily to conserve chum salmon but also in part to conserve the remaining chinook salmon and to allow some numbers of coho salmon to pass upstream for subsistence use. Coho index numbers from the BTF indicated rising numbers of coho in the last week of July with run strength showing signs of being early and in promising numbers. In order to minimize the incidental harvest of chum and chinook salmon, only Subdistrict W-1B was open for 4 hours during the first coho salmon fishing period. The third opener was a 6-hour period on 4 August in Subdistrict W-1A setting up the rotation of opening upstream from Bethel (W-1A) one day and then downstream from Bethel (W-1B) the next day. There was a three-day time lag between a Subdistrict W-1B opening and the next Subdistrict W-1A opening to allow a pulse of fish to migrate through the district without being harvested during successive fishing periods. The entire District W-1 was open, for the last period on 25 August. Catch and effort had declined enough to permit a full district opener without exceeding processing capacity.

This scheme for spreading out the effort and potential catch did allow for the intent of the proposal. That is, to allow the sole local processor to operate with staffing at levels that permitted the processor to remain profitable and supply the processing line with manageable quantities of fish. A higher quality product was produced with little or no wastage.

In August, each subdistrict was opened for two 6-hour periods every 8 days so each permit holder was able to fish up to 12 hours every eight days. Given the available processing capacity and anticipated harvest levels in 2000, had this regulation not been in effect, commercial fishing would probably have been limited to two 2- or 3-hour periods per week.

Since initiation of the project in 1984, the Bethel test fishery CPUE provides a good estimate of the migration rate of salmon passing Bethel. The midpoints of the chinook, sockeye, and chum migrations in the Bethel test fishery were near normal. The coho salmon migration timing was the second earliest on record. The chinook migration midpoint of 20 June was 2 days earlier than the historical median of 22 June (Molyneaux 1999). The sockeye migration midpoint was 27 July, 1 day earlier than the 28 June median (Molyneaux 1999). The chum salmon migration midpoint was 3 July, identical to the 3 July median (Molyneaux 1999). The midpoint of the coho run was 3 August, 7 days earlier than the historical median of 10 August (Molyneaux 1999).

There was only one commercial fishing period in District 1 during the chum salmon season, which occurred on 5 July. A total of 224 permit holders harvested 11,026 chum salmon (Table 6). This was 5% of the most recent 10-year average chum salmon harvest. This is the latest opening date in the history of the Kuskokwim River chum salmon directed fishery. In June and July, there were no commercial openings in District 2 (Table 6). The average price per pound for chum salmon was \$0.10 making the exvessel value of the chum catch worth only \$7,967 (Table 3).

Run assessment through late-June showed poor chum and chinook salmon abundance. The Working Group met on 26 June and recommended that Subdistrict W-1B be open for 4 hours on 28 June. The department (with USF&WS concurrence) did not accept the Working Group recommendation due to the extreme weakness of the chinook and chum salmon returns. They decided to meet again on 29 June. By late June, subsistence catches of chinook and chum salmon run strength had increased. At the 3 July meeting, the Working Group recommended that the Kuskokwim River be opened to commercial fishing on 5 July. The department opened the commercial fishery on 5 July for 4 hours downstream of Bethel in accordance with 5 AAC 07.365 KUSKOKWIM RIVER SALMON MANAGEMENT PLAN. The catch of 11,026 chum salmon was well below average for that date and, even with the low effort level, the CPUE was also well below average. The chinook and sockeye salmon catches and CPUEs were below average for that date.

For the remainder of the season, run strength indicators showed the chum salmon return to be well below average. The weak return of chum salmon resulted in a very conservative management strategy. Only one commercial chum period was allowed. Under what has come to be considered, by most commercial fishers, a 'normal' fishing schedule consists of two openings per week (Monday and Thursday), with two or three days of no fishing between periods.

The preseason outlook for coho salmon was for an average to above average return. Although coho salmon escapement was considered very good during the 1996 parent year, the poor survival of the 1993, 1994, and 1995 escapements tempered the outlook for 2000. The level of uncertainty in the 2000 coho outlook was especially high given the limited escapement assessment information and the unexpectedly poor return of coho salmon in 1997, 1998, and 1999. The preseason projected harvest of coho salmon in the Kuskokwim River commercial fishery ranged from 100,000 to 500,000 fish (Burkey et al 1999b).

The coho salmon season began on 1 August with a 4-hour period in Subdistrict W-1B, the lower half of District 1. A total of 25,624 coho salmon were harvested by 248 permit holders in the first period (Table 6). Total coho salmon harvest for the season was 57% of the most recent 10-year average coho salmon harvest. The average price per pound for coho salmon was \$0.28 making the exvessel value of the coho salmon catch worth \$489,644.

Throughout the season, coho salmon run strength appeared to be average based on data from monitoring projects and the commercial catch. The conservative management strategy followed during the chum directed fishery was continued through the coho fishery. Although coho salmon migration timing was 7 days earlier than normal, in order to conserve chum salmon, the first coho salmon opening did not occur until after approximately 36% of the coho salmon run had passed Bethel based on the test fishery. To further conserve chum salmon, fishing was allowed only in Subdistrict W-1B (District 1 below Bethel) during the first coho salmon opening. The length of the first coho salmon period was reduced to 4 hours, from a more normal 6 hours, due to limited processing capacity and to help minimize the catch of chum salmon. The Kuskokwim River closed to commercial fishing by regulation on 1 September.

No citations were issued for failure to transfer properly between subdistricts of District 1 as required under new regulations. However, approximately 15 permit holders were issued warnings about failure to properly notify the department of their intent to transfer. Many verbal and some written warnings were issued to fishermen for failure to properly identify their vessel, which was also a new regulation. All of these permit holders were in compliance with the vessel identification regulation by the following period.

Chinook Salmon

The combined commercial and subsistence chinook salmon harvest has increased from an average of 56,000 fish from 1960-1969 to 115,000 during 1988-1997 (Appendix B.3). A concern for Kuskokwim River chinook salmon arose following a series of years with poor chinook salmon escapements in the mid-1980s (Figure 6). Besides the poor escapements, the low number of female chinook salmon in the escapement compounded the concern for the stock (Cappiello and Burkey 1997).

Beginning in 1984, the Board of Fisheries began restricting the commercial fishery because the department was unable to correct the problem through inseason management measures. In 1985, a shift to 6-inch or smaller mesh commercial gillnets reduced the harvest of larger female chinook salmon. This gear change was successful in reducing the sex ratio of the commercial catch from 43% to 29% female (Molyneaux and DuBois 1996). However, the total escapement index continued to decline (Figure 6). To provide for the subsistence harvest and maintain average spawning escapements the directed commercial harvest of chinook salmon was prohibited in 1987. Chinook salmon escapements improved in subsequent years (Figure 6). An unexpected benefit of the improved status of chinook salmon in the Kuskokwim River was an increase in the commercial harvest of chinook salmon (Molyneaux and DuBois 1996). The subsistence fishery continues to target large chinook salmon with large mesh "king" gear.

Improved survival, perhaps related to elimination of the directed high seas salmon fishery, played a role in the success of these management changes.

Since 1987 the chinook salmon catch has been incidental to the chum salmon fishery in Districts 1 and 2. In 2000, the commercial harvest of 444 was well below the recent 10-year average of 23,387 (Appendix B.3). This was primarily due to the limited fishing time during the chum salmon fishery. The exvessel value of the chinook harvest was, well below the recent ten-year average of \$132,709 (Table 3).

Even with a record late start of the commercial fishery, allowing only one commercial opening during the chinook season, and establishing gillnet mesh size restrictions, the total Kuskokwim River drainage escapement index for chinook salmon was not achieved in 2000 (Figure 6). Chinook escapement at the Kogrukluk River weir was 3,310, well below the goal of 10,000 fish (Appendix A.7). Chinook salmon escapement goals were achieved in none of the 6 aerial survey index streams that were surveyed (Appendix B.4 and Table 8). The Bethel test fish index for chinook salmon was the lowest on record (Molyneaux 1999).

Sockeye Salmon

The sockeye salmon catch is incidental to the directed chum salmon fishery in Districts 1 and 2. Before 1981, sockeye and chum salmon were not accurately differentiated in commercial or subsistence catches. This prevented an accurate record of the sockeye and chum salmon harvest in the Kuskokwim River. Sockeye salmon have comprised 5% to 33% of the sockeye-chum salmon catch since 1981. Before 1981, the reported sockeye salmon catch was less than 2% of the sockeye-chum salmon catch (Appendix B.5). In 2000, the commercial harvest of 4,130 sockeye salmon was 93% below the recent 10-year average of 58,866 (Appendix B.5).

Sockeye escapement at the Kogrukluk River weir was 2,867, which was 79% below the recent 10-year average escapement of 13,804 fish (Appendix A.7). The Bethel test fish index for sockeye salmon ranked fourteenth out of 17 years of data (Molyneaux 1999).

Chum Salmon

Before 1971, chum salmon were an incidental catch during the chinook and coho directed salmon fisheries. The expansion of the commercial chum salmon fishery began in 1971. Based on the 1924-1943 subsistence harvest estimates, a total chum salmon harvest of 400,000 appeared to be consistent with the reproductive potential of the run (Appendix A.4). A combined commercial and subsistence catch of 400,000 chum salmon was the management goal from 1971 to 1979. Subsistence catches for the entire river have declined since the inception of the commercial fishery in 1971 (Appendix B.6). From 1971 to 1980 the average subsistence chum harvest was 173,689. The average harvest declined to 136,206 for the period 1981 to 1990 and to 59,865 for the period 1991-1998 (Appendix B.6). This is thought to be primarily due to the decline in the use of dog teams for transportation, not the increased commercial harvest. The low harvests in the 1990s are also influenced by overall poor chum salmon returns in the 1990s.

The commercial chum salmon harvest for the Kuskokwim River (Districts 1 and 2) has averaged 261,412 salmon in the previous 10 years (Appendix B.5).

The following guidelines are used to manage the commercial harvest:

1. Chum salmon run assessment projects indicate that escapements will be adequate.
2. Commercial catch per unit of effort compares to previous years when escapements were adequate.
3. Subsistence fishers report adequate subsistence catches.

Declining run strength normally resulted in a one to two week closure in the last half of July. Since 1988, this closure of the commercial fishery between the chum and coho seasons has occurred in most years. Before 1985, only that portion of District 1 downstream of Bethel was open to commercial fishing during the chum salmon fishery. The Board instructed the department to use the entire length of District 1 beginning in 1985. Low chum escapements occurred in 1986 and 1987. Runs in 1988 and 1989 were at record high levels, but in order to reach escapement objectives more time was required between fishing periods. The 1990 and 1991 runs were smaller, but a 4 to 6 day spacing between periods resulted in approaching or reaching chum salmon escapement objectives. Since 1991, the commercial fishery has been opened later in June and generally has had relatively longer spacing between commercial periods. The 1993 and 1997 runs were two of the lowest on record with only one commercial opening and the lowest subsistence harvests on record. The returns in 1994 and 1996 were strong but limited processing capacity resulted in reduced fishing time (shorter periods) and below average commercial harvests (Appendix B.7). Although better than the disastrously low 1997 return, the 1998 chum salmon run strength was below average, which required 4-10 days spacing between commercial periods. The chum run in 1999 was extremely poor, similar in strength to the 1993 and 1997 runs.

The cumulative CPUE for chum salmon in the Bethel test fishery in 2000 was the seventh lowest since the project began in 1984 (Molyneaux 1999). The Aniak River sonar count of 144,157 was 42% below the goal of 250,000 counts (Table 9). The Kogruklu River weir passage of 11,491 chum salmon was 62% below the goal of 30,000 fish. Daily chum salmon counts at the George River weir were generally below those in all previous years (Appendix A.7).

The contribution of 4-year-old fish in the 2000 run was much poorer than expected based on the good escapement in 1996. At the Kogruklu River weir, parent-year escapements exceeded the objective in the 1995 and 1996 brood years (Appendix A.7). No escapement estimate is available from the Aniak River sonar in 1995 while the escapement objective was exceeded in 1996 (Appendix A.7). The observed contribution of 5-year-old chum salmon was low, as expected based on the low number of 4-year-olds in 1999.

Coho Salmon

Kuskokwim River managers have a limited number of inseason indicators of coho salmon abundance in the drainage: the Bethel test fishery, Kogruklu River weir, commercial catch data and an informal collection of subsistence fishing information. As they accumulate additional years of successful operation, the George, Tatlawiksuk, and Takotna River weirs will become more useful as coho salmon run strength indicators. The Kogruklu River weir has a coho escapement objective of 25,000 fish. Commercial catch per unit of effort in District 2 during coho season was not as good an indicator of abundance of coho salmon above District 1 due to the low fishing effort in 2000.

Traditionally, coho salmon (locally called "rain fish") were not well utilized for subsistence because of poor drying conditions during rainy fall weather. Subsistence use of coho salmon has increased in areas where freezers are available to preserve fish. This season, many subsistence fishers in the middle and upper Kuskokwim drainage reported that they planned to harvest more coho salmon than usual to make up for their poor subsistence chinook salmon harvests. Since 1988, Subsistence Division staff has started their surveys after coho salmon have completed migration past the upper river villages. This has improved the quality of the coho salmon data over earlier years when subsistence surveys were conducted before subsistence fishing for coho was finished.

Commercial coho fishery management in the Kuskokwim River is based on coho salmon abundance when that species dominates the commercial catch. Fishing periods are usually simultaneous in Districts 1 and 2 throughout the season, which closes by regulation on 1 September. Record runs in 1984 and 1994 as well as a late run in 1989 resulted in extensions of the season in those years (Appendix B.7). The management strategy during the coho season is similar to that for chum salmon.

In the most recent 20 years, coho catches have ranged from 23,593 fish in 1999 to the record high harvest in 1996 of 937,299 fish (Appendix B.5). The most recent 10-year average harvest is 468,650 fish. Since 1985, in years when both Districts 1 and 2 had buyers, the number of permit holders that fished during coho season has ranged from 597 to 775. In 2000 a total of 519 permit holders harvested 261,379 coho salmon in the Kuskokwim River districts (Table 6).

Under cooperative management of the commercial fishery with the Kuskokwim River Salmon Management Working Group, the coho salmon escapement goal at the Kogruklu River weir has been achieved in four out of eight years with adequate project operations and resulting data (Appendix A.7). Lack of public confidence in the Bethel test fishery, lag time of Kogruklu River weir escapements, and lack of sufficient additional data contributed to not meeting escapement goals. The uncertainty in run assessment during the early portions of the run in some years results in corrective actions being taken too late to make a significant difference in escapement needs to the upper drainage as indexed by Kogruklu River weir.

In 2000, the Kogruklu River weir operated during most of the coho migration. An estimated 33,135 coho salmon escaped, which was 33% above the minimum escapement goal of 25,000

fish (Appendix A.7). The Bethel test fishery cumulative CPUE in 2000 was the second highest on record (Molyneaux 1999).

Kuskokwim Bay

Quinhagak (District 4)

District 4 is located in the marine waters adjacent to the village of Quinhagak at the mouth of the Kanektok River, approximately 25 miles south of the Kuskokwim River (Figure 4). The commercial fishery was initiated in 1960, and occurs only in the marine waters of Kuskokwim Bay to ensure adequate escapement of salmon into the Kanektok and Arolik Rivers. The northern boundary of the fishing district is approximately seven miles from Quinhagak at Weelung Creek, and the southern boundary of the fishing district is approximately four miles from Quinhagak at the southernmost mouth of the Arolik River. The western boundary of the fishing district is three miles from the coast. Commercial fishing occurs primarily in the tidal channels that radiate out into the bay from freshwater streams in the district.

In the Kuskokwim Area, permit holders have unrestricted movement between commercial fishing districts, and the commercial fishing effort in District 4 increased considerably in the early 1990s. The number of permit holders, fishing in District 4, the last two decades has ranged from 177 in 1982 to a record high of 409 during the 1993 season. The recent 10-year average was 311 permit holders (Appendix C.1). The majority of the fishing effort occurs during the chinook and sockeye season with usually twice as many permits fished compared to coho season (Appendix C.2). The shift of effort in the early 1990s to District 4 may be due to the directed chinook salmon fishery, and more conservative management in the June Kuskokwim River commercial fishery. However, in the last several years District 4 had below average effort and this trend continued in 2000 when 230 permit holders participated in the fishery. In 2000, the number of permits fished during chinook and sockeye salmon season were 25% below the 10-year average and the number of permits fished during coho season were 21% below the 10-year average (Appendix C.2). The lower number of permit holders participating in the fishery in the last several years may be attributable to lower fish prices and several construction projects in the area that offer more secure income. Also, higher fuel prices may have discouraged permit holders who reside outside of the local area from participating in the fishery. There were 27 commercial fishing periods during the 2000 season, which was 13% below the 10-year average of 31 periods. The 2000 District 4 harvest of 150,868 salmon ranked fourteenth out of forty-one years (1960–2000), and was 29% below the recent 10-year average of 211,659 salmon (Appendix C.3).

Although there was often only one buyer in the Quinhagak fishery, processor capacity only affected the fishing effort in one opening, on 15 July, due to weather. The low prices of the past few years have continued, and the exvessel value of \$466,167 was 35% below the 10-year average of \$716,238 (Table 3).

A joint weir project between the Department and the Native Village of Kwinhagak (NVK) was scheduled to begin counting in 2000, but because of high water levels and construction delays

the project is now scheduled to be operational in 2001. No escapement aerial surveys (Appendix C.4) were flown during peak spawning periods because of poor weather conditions.

Historically District 4 usually opens before 16 June in compliance with 5 AAC 07.367. DISTRICT 4 SALMON MANAGEMENT PLAN. A meeting with fishermen in Quinhagak on 12 June resulted in a consensus to have the first opening on Thursday, 15 June. An average harvest for chinook salmon occurred on the first opening (Table 10 and Appendix C.5), and fishing continued on the normal two periods per week schedule for chinook salmon season.

All commercial fishing periods in 2000 were 12 hours. In most commercial fishing periods during the chinook season the CPUE suggested an average run. The 2000 chinook salmon commercial catch of 21,229 was the twelfth highest catch on record (1960-2000), and was 2% above the recent 10-year average of 20,851 (Appendix C.3). Buyers paid an average price of \$0.39 per pound, which was 6 cents higher than last year's price. The exvessel value of chinook salmon of \$131,001 was below the 10-year average of \$154,507 (Table 3).

The directed sockeye salmon fishery began after the 29 June opening when the sockeye catch exceeded the chinook catch. Fishing occurred on the normal three periods per week schedule during the sockeye fishery as the catch and CPUE (Table 10) were often above the historical average (Appendix C.6). The 2000 sockeye salmon catch of 68,557 was the fifth highest catch on record (1960-2000) and was 9% above the recent 10-year average of 62,963 fish (Appendix C.3). The average price paid for sockeye salmon was \$0.55 per pound, the same price as last year. The exvessel value for sockeye salmon in District 4 of \$249,473 was below the 10-year average of \$280,465 (Table 3).

Chum salmon are an incidental catch in the chinook and sockeye salmon commercial fisheries in District 4. The 2000 chum salmon catch of 30,553 was 46% below the recent 10-year average of 56,394 fish (Appendices C.3 and C.8). The average price per pound for chum salmon (\$0.10) was the same as last year, but the exvessel value of \$23,929 was below the 10-year average of \$78,723 (Table 3).

The directed coho salmon fishery began after the 28 July opening when the coho catch surpassed the sockeye catch. The coho catches in late July and early August were above average and commercial fishing continued on the normal three periods per week schedule. The run peaked the second week of August, which was approximately one week before the normal period of peak catches. Two more commercial openings occurred the following week with catches declining from the previous openings. Usually the coho run is building or peaking by the third week of August. When declining catches occurred during this time period in 2000, the department reduced commercial fishing to two periods the third and fourth week of August. The last two openings during the fourth week of August were record low catches for that time period. Normally the district closes by regulation on 8 September, although some times buyers suspend operations in late August because of declining catches. Because the coho catches indicated early run timing and the department was planning to further reduce coho fishing time the buyer ceased operations after the 24 August commercial opening. The 2000 coho catch of 30,529 was 49% below the recent 10-year average of 59,978 fish (Appendix C.3). The 2000 coho catch was the

nineteenth highest in the history of the fishery (1960–2000), but the third lowest catch in the 1990s. Permit holders were paid an average of \$0.27 per pound, which was \$0.07 below last year's price. The exvessel value of \$61,763 was well below the 10-year average of \$199,497 (Table 3).

Goodnews Bay (District 5)

Commercial fishing began in Goodnews Bay, the southernmost salmon district in the Kuskokwim Area, in 1968 (Figure 5). Fishing primarily is with drift gillnets in tidal channels in Goodnews Bay and a few set gillnets near the mouth of the bay. The number of commercial fishers peaked in 1988 when 125 permit holders fished, and the recent 10-year average is 84 permit holders (Appendix D.1). However, in the last several years, participation has been below average in District 5, with 53, 54, and 50 permit holders in 1996, 1997, and 1998, respectively (Appendix D.2). In 1999 there were 73 permits fished and this may have been the result of reduced fishing time in District 4. In 2000, Districts 4 and 5 fished comparable schedules and the 46 permit holders participating in District 5 was the lowest number since 1981. The decrease in permits fished when compared to the 10-year average is likely the result of lower fish prices, higher fuel prices and construction projects in Goodnews Bay.

In recent years, District 5 fishing time had been affected by processor availability. In 2000 three openings were affected by weather preventing a tender from arriving on the grounds. The 25 commercial fishing periods in 2000 was 4% below the recent 10-year average of 26 periods. The 2000 District 5 harvest of 64,669 salmon was 19% below the recent 10-year average of 80,304 salmon (Appendix D.3), and was the sixteenth highest harvest in the history of the fishery (1968–2000). The exvessel value of \$213,013 was 30% below the 10-year average of \$305,169 (Table 3).

A counting tower on the Middle Fork Goodnews River provided estimates of salmon escapement from 1981 through 1990. In 1991 a weir replaced the tower. The weir provided more accurate counts at a lower cost, and the savings have allowed the project to enumerate a portion of the coho salmon escapement. The primary objective of this project is to provide daily escapement information to improve management of the commercial fishery. The Middle Fork Goodnews River weir project also provides a calibration of aerial survey data (Appendices D.4 and D.5).

As in District 4, all fishing openings in District 5 in 2000 were 12 hours. Over the last six years the management strategy has been to delay the first opening until the last week of June as an attempt to increase escapement of chinook salmon into the Goodnews River drainage. The delayed first opener strategy has resulted in the escapement goal of 3,500 chinook salmon, past the Middle Fork Goodnews River weir, being met three times in the previous six years (Appendix D.6 and D.7). The chinook salmon escapement in 2000 was estimated to be approximately 5% short of the goal of 3,500 fish. The actual count was 2,516 chinook. The chinook escapement was believed to have been approximately 3,295 chinook salmon. High water resulted in a later than normal start date for the weir project as the weir was not operational until 2 July and historically approximately 24% of the run had passed by that date. No aerial surveys were flown because of poor weather. Using historical aerial survey ratios the North Fork

Goodnews River escapement was estimated at 6,458 chinook salmon (Appendix D.4). The commercial catch of 4,442 chinook salmon was 83% above the recent 10-year harvest of 2,433 fish (Appendix D.3 and D.8). Permit holders were paid an average of \$0.40 per pound, which was \$0.11 above last year's price. The exvessel value of \$25,614 was above the 10-year average of \$18,514 for chinook salmon (Table 3).

The first commercial fishery opening was on 26 June. The first two openings resulted in an above average catch and an above average CPUE. However, concern as to whether the good catches were a result of fishing on milling chinook salmon resulted in the department having only two openings during the first week of commercial fishing. Sockeye salmon catches for the first two periods were records for that date. The following week the weir became operational and indicated that sockeye escapement would easily be met and that chinook salmon escapement was tracking near the escapement goal. The department resumed with the normal fishing schedule of three periods per week. Catches for sockeye continued to be above average and chinook catches were average for that time period. After the first week of counting at the weir 60% of the sockeye escapement goal had been reached indicating that the escapement goal of 25,000 would be easily attained. Therefore, commercial fishing continued on the normal three periods a week schedule throughout the sockeye season. The commercial harvest in 2000 was 37,239 sockeye salmon, which was 5% below the recent 10-year average of 39,962 fish, but was the best catch since 1995. The 2000 sockeye catch ranked eighth historically (Appendix D.3 and D.9). The average price paid for sockeye salmon, \$0.55 per pound, was 2 cents higher than last year. The exvessel value for sockeye salmon in District 5 of \$146,708 was below the 10-year average of \$184,979 (Table 3). The escapement at the Middle Fork Goodnews River weir was likely over 40,000 sockeye salmon. There were 32,632 sockeye actually counted and interpolation made for fish passage before the weir was operational, when historically approximately 23% of the run had passed, resulted in an escapement estimate of 42,197 sockeye salmon. Using historical aerial survey ratios the North Fork Goodnews River escapement was estimated at 73,845 sockeye salmon (Appendix D.4).

The chum salmon catch is incidental to the sockeye salmon fishery in District 5. Chum catches were below historical catches (Appendix D.11) in 2000. The 2000 catch of 7,450 chum was 52% below the 10-year average of 15,511 fish and was the ninth lowest catch historically (1968 – 2000). The average price per pound for chum salmon was \$0.10, which was the same as last year, and the exvessel value of \$6,001 was below the 10-year average of \$22,515 (Table 3). The chum salmon escapement at Middle Fork Goodnews River weir was likely short of the 15,000 goal. The actual number of chums counted was 13,803 and the estimated escapement was 14,720 chum salmon. Historically approximately 6% of the chum run passes before 2 July. Using historical aerial survey ratios the North Fork Goodnews River escapement was estimated at 35,475 chum salmon (Appendix D.4).

The directed coho salmon fishery began after the 5 August opening, when coho salmon catch surpassed sockeye salmon catch. Coho catches had been strong in late July and early August when compared to historical catches. The department continued with the normal three commercial fishing periods per week during coho season. Although an escapement goal has yet to be established for coho salmon, the weir had high passage of coho compared to other years in

the past decade. Coho catches continued to be above average until the third week of August when catches started to decrease. Historically catches in the district peak the end of the third week or early in the fourth week of August. District 5 run timing follows District 4 by approximately one week and as the District 5 catches were now exhibiting the same pattern as seen earlier in District 4, the department felt the strong catches in early August were the result of early run timing. The fourth week of August continued to show below average catches for that time period and the department reduced fishing to two periods that week. The buyer closed operations due to lower catches and poorer quality salmon delivered in the last opening on 24 August. The 2000 coho salmon catch of 15,531 was 21% below the recent 10-year average of 19,690 fish (Appendices D.3 and D10). Historically the coho catch was the fourteenth lowest (1968–2000). Permit holders were paid an average of \$0.27 per pound, which was \$0.12 less than last year. The exvessel value of \$34,689 was below the 10-year average of \$78,280 (Table 3).

This was the fourth year that escapement counting continued into September at the Middle Fork Goodnews weir. Escapement for 2000 was 19,676, which was above the escapement in 1997 and 1999, but below the 1998 escapement. In 1997 and 1998 the weir was pulled on 17 September. Counts in 1997 and 1998 were 9,617 and 35,441 coho salmon respectively. In 1999 the weir was operational from 14 August until 26 September and the escapement was 11,545 coho salmon (Appendix A.7). Presently no escapement goal has been established for coho salmon at the Middle Fork Goodnews weir due to the limited coho escapement database.

Enforcement

The Fish and Wildlife Protection Division of the Department of Public Safety were present in the Kuskokwim Area from early June until early September. Personnel available for this program were four commissioned and one non-commissioned officer. They used one C-185, three Supercub aircraft and one skiff. Details on number and type of citations issued for commercial fishing violations are not available at this time.

OUTLOOK FOR 2001

The Alaska Department of Fish and Game does not produce formal run forecasts for any salmon runs in the Kuskokwim Area. Salmon run outlooks are qualitative in nature due to the lack of adequate information with which to develop forecasts that are more rigorous. Consequently, the commercial harvest outlooks for the Kuskokwim Area are qualitative and typically based upon available parent year spawning escapement indicators, age composition information, trends in harvest and the likely level of commercial harvest that can be expected to be available from such indicators, given the fishery management plans in place. While the commercial harvest outlooks provide for a general level of expectation, the fisheries are managed based upon inseason assessments of the actual runs.

In the Kuskokwim Area, as in some other areas of the state, salmon production has decreased notably for many stocks (Kruse 1998, NOAA 1999). In October 2000, the Alaska Board of Fisheries classified Kuskokwim River chinook and chum salmon as stocks of concerns under the

guidelines established in the Sustainable Salmon Fisheries Policy for the State of Alaska (5AAC 39.222). Causes for the loss of productivity have been the subject of much interest and concern, but to date it is unknown whether the decline in productivity can be expected to continue or not.

The commercial harvest outlooks for the year 2001 try to qualitatively take into account the recent trend of decreased salmon abundance. Additionally, declining salmon markets, particularly for chum salmon flesh since 1994 and salmon roe in 1997, have had a major impact on the commercial fisheries in the Kuskokwim Area. A continuation of these market trends in the year 2000 is expected and may further reduce harvests, or lower exvessel value.

For the year 2001, the commercial harvest outlook for the Kuskokwim Area consists of 12 to 25 thousand chinook, 65 to 115 thousand sockeye, 40 to 80 thousand chum salmon, 0 to 1 thousand pink, and 33 to 380 thousand coho salmon (Table 11).

Kuskokwim River

Chinook:

- Recent Year Trends: diminished commercial harvest for most of the past 10 years, plus poor escapements in 1998, 1999 and 2000.
- Parent Year Escapements: good.
- Poor ocean survival appears to have affected Kuskokwim River chinook salmon in 1998, 1999 and 2000 and this may continue to be a factor in 2001.

Given poor to extremely poor chinook salmon runs of the past two to three years, the 2001 chinook run is expected to be well below average. The 2001 chinook salmon run may be too low to provide for a harvestable surplus for the commercial fishery. We are tentatively approaching the 2001 season with little expectation of commercial fishing during June and July. Furthermore, reduction of the chinook salmon subsistence harvest may be necessary in 2001.

Chum:

- Recent Year Trends: chum salmon returns have been poor to extremely poor since 1997.
- Parent Year Escapements: good in 1996 (will return as age-5 fish), but very poor in 1997 (will return as age-4 fish).
- 2000 Age Composition Data: preliminary results are that the low returns in 2000 were seen in both age-4 and age-5 chum salmon. The poor return of age-4 chums indicates that in 2001 the age-5 component will be weak.
- Poor ocean survival appears to have affected Kuskokwim River chum salmon in 1997, 1998, 1999 and 2000 and this may continue to be a factor in 2001.

The 2001 chum run is expected to be well below average given the last four years of poor to extremely poor chum salmon runs and the low return of age-4 chum in 2000. The run may be too low to provide for a harvestable surplus for the commercial fishery. We are tentatively approaching the 2001 season with little expectation of commercial fishing during June and July. Furthermore, reduction of the chum salmon subsistence harvest may be necessary in 2001.

Sockeye:

Sockeye returns are expected to be average to below average, however no commercial harvest is expected due to conservation measures anticipated for chinook and chum salmon.

Coho:

- Recent Year Trends: coho returns in 1997, 1998 and 1999 were poor and the return in 2000 was near average to below average.
- Parent Year Escapements: poor in 1997.
- 2000 Age Composition Data: vast majority of coho return at age-4.
- Poor ocean survival appears to have affected Kuskokwim River coho salmon in 1997, 1998, 1999 and 2000 and this may continue to be a factor in 2001.

Although our ability to assess coho salmon runs is uncertain, a below average run is expected given the poor escapement in 1997 and the poor survival experienced since 1997. Commercial harvest is expected to be below average.

Kuskokwim Bay**Chinook:**

- Recent Year Trends: average to above average commercial harvest for much of the past few years. Recent year escapement information for the Kanektok River (District 4) has been limited, but escapements to the Goodnews River (District 5) have been above average or near the escapement goal.
- Parent Year Escapements: fair to good, although information from the Kanektok River is incomplete.

The 2001 chinook salmon return to Kuskokwim Bay districts is expected to be near average. The District 4 fishery may be impacted by conservation measures directed at conserving Kuskokwim River salmon. In District 5, management actions will continue to be oriented towards rebuilding chinook salmon run strength, as has been the case for the past several years.

Chum:

- Recent Year Trends: chum salmon runs have been average to below average; escapement information is lacking for the District 4, but in District 5 the escapement goal has been consistently achieved, or nearly achieved.
- Parent Year Escapements: the limited information available for District 4 suggests chum salmon escapement to the Kanektok River was below average in both 1996 and 1997; escapement goals were achieved in the Goodnews River of District 5.

The 2001 chum salmon run to Kuskokwim Bay districts is expected to be near average to below average. The District 4 fishery may be impacted by conservation measures directed at conserving Kuskokwim River chinook and chum salmon.

Sockeye:

- Recent Year Trends: sockeye salmon runs have been average to below average; escapement information is lacking for the District 4, but in District 5 the escapement goal has been consistently achieved.
- Parent Year Escapements: the limited information available for District 4 suggests sockeye salmon escapement to the Kanektok River was good in both 1996 and 1997; escapement goals were achieved in the Goodnews River of District 5.

The 2001 sockeye salmon run to Kuskokwim Bay districts is expected to be average to above average. The District 4 fishery may be impacted by conservation measures directed at conserving Kuskokwim River chinook and chum salmon.

Coho:

- Recent Year Trends: coho runs were poor to below average in 1997, 1999 and 2000 and near average in 1998.
- Parent Year Escapements: no coho escapement information is available for District 4; in District 5 the escapement to Goodnews River was poor in 1997.
- Poor ocean survival appears to have affected Kuskokwim Bay coho salmon in 1997, 1999 and 2000 and this may continue to be a factor in 2001.

The outlook for the commercial harvest of coho salmon from Kuskokwim Bay District in 2001 ranges from below average to above average.

PART II: FRESHWATER FINFISH FISHERY

Several species other than salmon, herring and halibut are used for commercial, subsistence, and recreation purposes in the Kuskokwim Area. They are inconnu or sheefish (*Stenodus leucichthys*), whitefish (*Coregonus*) and (*Prosopium*) char (*Salvelinus*), burbot (*Lota lota*), Arctic grayling (*Thymallus arcticus*), northern pike (*Esox lucius*), Arctic lamprey (*Lampetra japonica*), rainbow smelt (*Osmerus mordax*) blackfish (*Dallia pectoralis*), rainbow trout (*Oncorhynchus mykiss*), lake trout (*Salvelinus namaycush*), threespine stickleback (*Gasterosteus aculeatus*), ninespine stickleback (*Pungitius pungitius*), and longnose sucker (*Catostomus catostomus*). The Division of Sport Fish documents the recreational fisheries.

Subsistence Fishery

Methods used for harvesting subsistence freshwater finfish include set and drift gillnets, seine, fish wheels, long lines, dip nets, jigging (hook and line through the ice), rod-and-reel and pots (locally called "traps"). Subsistence harvests occur year round. These fish may be eaten fresh, dried, smoked or frozen. Most are used for human consumption; however, some are also used for dog food. Regulations do not limit the number of freshwater fish that may be harvested for subsistence. Harvest data for these species are not collected on an annual basis. Data for some Kuskokwim Area communities may be found in the Division of Subsistence Technical Paper series.

Commercial Fishery

The commercial fishery has been sporadic, primarily harvesting whitefish and burbot for local markets. Some of the whitefish harvest occurs under the ice in the winter.

A permit from the Commercial Fisheries Entry Commission is required. A permit from the department to conduct commercial fisheries on whitefish, pike, smelt, burbot and lamprey is also required. Those species may also be taken incidentally to commercial salmon fishing. One freshwater permit was issued by the Bethel CF office in 2000 for the Kuskokwim Area. The guidelines for permits are:

1. All waters of the area except the Johnson River drainage and Whitefish Lake are open to commercial harvest of freshwater finfish. The heavy subsistence utilization of freshwater species in these areas is the reason for the closure.
2. Only whitefish, cisco, smelt, pike, burbot, and lamprey may be taken. Sheefish, char and trout may not be taken due to their smaller populations, lower reproductive rates and their heavy utilization in the subsistence and sport fisheries.
3. All legal commercial gear types are allowed.

4. Gillnets may not be less than 2 1/2 or greater than 5 inches stretch mesh. Long lines and set lines must use hooks with a gap between point and shank larger than 3/4 inch.

Appendix F.1 presents the freshwater finfish fishery catches and value since 1977. No commercial landings of whitefish were documented in 2000 (Appendix F.1).

Stock Status

The department does not monitor the status of the freshwater species in the Kuskokwim Area. Limited department observations, advisory committee recommendations and fishers interviews give no indication of declining populations in most drainages. However, residents of Kasigluk, Atmautluak and Nunapitchuk have expressed concerns that subsistence fishers are overexploiting the whitefish stocks in Nunavakpak Lake (near Kasigluk).

PART III: MISCELLANEOUS SALTWATER FINFISH

A poorly documented commercial fishery on Saffron or "Tom Cod" (*Eleginus gracilis*) has occurred in the Kuskokwim Area for some time. These fish were surplus to subsistence needs and fishers and local stores were, and often still are, unaware of the regulatory requirements. The department has been trying to inform buyers and sellers of these requirements. Since 1988, we have had information on the sale of fish exported from the coastal villages to Bethel. Sales within the villages are still undocumented. No commercial landings were documented in 2000 (Appendix G.1).

PART IV. HERRING FISHERY

INTRODUCTION

Area and District Boundaries

There are five commercial gillnet sac roe districts and subsistence herring fisheries in the Kuskokwim Area. The Security Cove District includes all waters between the latitude of Cape Newenham and the latitude of the Salmon River (Figure 8). The Goodnews Bay District includes the waters of Goodnews Bay inside the north and south spits at the mouth and a line between the Ukfigag and Tunulik Rivers. The Cape Avinof District (Figure 8) consists of all waters landward of Kikegtek, Pingurbek and Kwigluk Islands from the longitude of Ishkowik River (162° 44' W. long) to the longitude of the Ursukfak River (164° 11' W. long). The Nelson Island District consists of all waters north of Chinigyak Cape and east of Atrnak Point, and all waters north of Talurarevuk Point and south of the southernmost tip of Chinit Point and east of 165° 30' W. long. and all waters north of the northernmost tip of Chinit Point and south of Kigigak Island and east of 165° 30' W. long. (Figure 9). The Nunivak Island District includes all waters extending three miles seaward of mean low water along the northern and east sides of Nunivak Islands from Kikoojit Rocks (60° 20' 00" N. lat., 166° 39' 05" W. long.) to

Kaksajookalik Island (59° 45' 10" N. lat., 166° 14' 20" W. long.), the western most point of Cape Mendenhall (Figure 9).

Management Programs

The Security Cove, Goodnews Bay and Nunivak Island commercial herring fisheries are managed under the Bering Sea Herring Fishery Management Plan which sets the maximum exploitation rate at 20% of the estimated spawning biomass. The department attempts to harvest stocks in good condition (large volume, increasing abundance, good recruitment) at the upper end of the exploitation range (15-20%). Stocks in poor condition (small volume, decreasing abundance, poor recruitment) are exploited at lower than maximum rates (0-15%). The Alaska Board of Fisheries has directed the department to manage the commercial herring fisheries in the Cape Avinof District for an exploitation rate not to exceed 15% of the estimated available biomass. To provide additional protection for the subsistence herring harvest in the Nelson Island District, the Board of Fisheries has established the following guidelines:

1. The commercial fishery will be allowed to take up to 15% of the herring biomass in 2001, compared to up to 20% for most other fisheries having stocks of similar size and condition.
2. The commercial fishing season will be opened when a biomass of 3,000 tons or spawning activity is documented.
3. Periodic closures of the commercial fishery will be scheduled, during which time only subsistence fishing will be allowed.
4. Several important subsistence use areas occur throughout the district (e.g. waters around Cape Vancouver) and specific areas may be closed to commercial fishing to insure the adequacy of subsistence harvests.
5. The department will use all available means, including input from local residents, to insure the adequacy of subsistence herring harvests during the commercial fishing season.

All Kuskokwim Area commercial herring fisheries are opened and closed by emergency order to provide for an orderly fishery and allow periodic assessment of herring biomass. In 1990, the Nelson and Nunivak Island Districts were given limited entry status by the Commercial Fisheries Entry Commissions (CFEC). Entry permits were issued to qualified applicants who had fished in these fisheries before 1 January 1988. The Goodnews Bay District was closed to new entry beginning in 1997 and given limited entry status with 182 limited entry permits being issued.

Season Summary

The total Kuskokwim Area Pacific herring harvest for 2000 was 1,503 short tons (st) with a total estimated value to the fishers of approximately \$298,000 (Appendix H.1). The price paid in all districts ranged from \$200 to \$350 per st for 10% roe recovery, with an increase or decrease of \$20 per st for each percentage point above or below 10%. This was equal to or above the 1999 price of \$200 per ton. Processors paid approximately \$50 per ton for bait herring. Commercial fisheries occurred in all districts. The sac roe harvest was 1,468 st. The only food/bait sales in this area occur during the sac roe fishery when herring are delivered with roe content below the

processors' acceptable minimums. Seventy-five st of herring did not meet processor roe criteria and were sold as bait while approximately 2 st of herring was lost to waste.

Fishing effort, measured in number of fishers who made deliveries, decreased in most districts in 2000. Three-hundred-forty-three permit holders landed herring in the Kuskokwim Area, a decrease of 11% from 1999. Effort decreased by 10% in Security Cove, 40% in Goodnews Bay, 9% at Nelson Island, and increased by 27% in Cape Avinof (Appendix H.2). Average income per permit holder ranged from \$53 in the Goodnews Bay District to \$1,744 at Nelson Island (Appendix H.3). Ten companies bought herring in the Kuskokwim Area in 2000. Average roe recovery, from sac roe quality herring, ranged from 9.2% in Goodnews Bay to 10.7% in the Security Cove District. The overall average sac roe content was 9.9 %. Exploitation rates in individual districts ranged from 0.3% in the Goodnews Bay District to 17.3% in the Nelson Island District (Appendix H.1).

The 2000 total estimated herring spawning biomass was 22,954 st for the surveyed portion of the Kuskokwim Area herring districts. This was 11% lower than the 1999 estimate (Appendix H.1). Ages 9 and older herring comprised 41.6% of the total biomass (Table 18). Recruit herring (ages 3, 4, and 5) accounted for 28.1% of the total run in number of fish (Table 19).

STOCK STATUS

Assessment Methods

Aerial surveys were flown throughout the Pacific herring spawning season in all Kuskokwim Area commercial fishing districts to determine relative abundance, distribution, and biomass of herring. Occurrence and extent of milt, numbers of fishing vessels and visibility factors affecting survey quality were also recorded. Data collection methods were similar to those used since 1978.

Approximately 24 hours were spent conducting aerial surveys in the Kuskokwim Bay Area in 2000: 5.4 hours in Security Cove, 7.4 hours in Goodnews Bay, 5.5 hours in Nelson Island and 5.0 hours in Nunivak Island. No surveys were conducted in the Cape Avinof District. Weather and sea conditions were variable throughout the Kuskokwim Bay Districts for most of the season, with most surveys being conducted under poor conditions.

Standard conversions of 1.52 tons/538 ft² (water depths less than 16 ft), 2.58 tons/538 ft² (water depths between 16 and 26 ft) and 2.83 tons/538 ft² (water depths greater than 26 ft) were used to convert estimated herring school surface areas to biomass within all districts.

Due to budget cuts, ADFG test fishing with variable mesh gillnets occurred only in the Goodnews Bay, Cape Avinof and Nelson Island districts. The test fishing data are used to determine age, sex, size and sexual maturity of herring and to note occurrence of other schooling fishes. Data from Goodnews Bay was used to estimate the metrics for the Security Cove District and data from Nelson Island was used for the Nunivak Island metrics. The sampling goal for test

fish crews was to sample a minimum of 60 herring per day or 420 per week from each district. Commercial landings were sampled in the same fishing districts. Age composition of herring collected from the department test fishery and the commercial catch is summarized, by district, in Table 19. Additionally, commercial gillnet vessels voluntarily collected herring samples within all districts that were evaluated by industry roe technicians for quality of roe content. This program allowed the openings to be timed to maximize roe production. This information also assists with interpretation and modification of aerial survey biomass data.

Ground surveys conducted in some districts provide information on the distribution and density of eelgrass beds and herring spawn deposition.

Spawning Populations

Security Cove District

Twelve aerial surveys were flown from 2 May to 23 May. Survey conditions ranged from fair to unsatisfactory. Herring spawn was observed on survey flights conducted from 8 to 16 May. On 13 May an aerial survey flown under fair conditions estimated a total of 5,238 st of herring in the district. This estimate was used as the total biomass estimate for 2000 and the guideline harvest level (GHL) was raised to 1,048 st as a result. A total of 8.1 miles of spawn was observed in the district with peak spawning activity (2 miles) on 10 May.

Due to budget cuts no herring samples were obtained from the Security Cove District in 2000. Age data was interpolated from samples collected at Goodnews Bay. Age 9 and older herring comprised 51.5% of the biomass (Table 18) while 3- to 5-year-old fish accounted for 28.1% of the return in numbers of fish (Table 19).

Goodnews Bay District

Eleven aerial surveys were flown in the Goodnews Bay District between 2 May and 23 May in 2000. The survey on 6 May was flown under fair conditions while the rest were flown under poor or unsatisfactory conditions. The largest concentration of herring was observed during a survey flown on 12 May, under fair to poor conditions, and was estimated at 6,348 st. This biomass estimate was used as the biomass estimate for 2000 and the GHL was raised to 1,270 st as a result. Approximately 6.5 miles of spawn was observed during aerial surveys on 8, 10, 12, 15, and 23 May with a peak spawn of two miles observed on 8 May.

Test fishing crews sampled 1,429 herring for Age-Sex-Length (ASL) data from 6 May to 26 May. Age 9 and older herring made up 51.5% of the biomass (Table 18) while age 3 to 5 fish were 28.1% of the return in numbers of fish (Table 19).

Cape Avinof District

In 2000 no aerial surveys were flown in the Cape Avinof District. The preseason biomass estimate of 3,210 st was used as the total biomass.

The Department's test fishery near Kipnuk captured 541 herring between 1 June and 7 June to sample for ASL data. Age 9 and older herring made up 28% of the biomass (Table 18) while age 3-5 year old herring represented 64% of the return in numbers of fish (Table 19).

Nelson Island District

Ten aerial surveys were flown between 16 May to 8 June during the 2000 season. Three surveys were flown under fair conditions. During an aerial survey flown on 29 May, 3,086 st of herring were observed in the district. This estimate exceeded the threshold necessary to initiate a fishery. Approximately 1.5 miles of spawn was observed during aerial surveys.

Test fishing with variable mesh gillnets occurred from 21 May to 13 June. ASL and maturity information was collected from 1,136 herring. Age 9 herring made up 39% of the biomass (Table 18) while age 3 to 5 herring accounted for 28% of the numbers of fish (Table 19).

Nunivak Island District

Eight aerial surveys were flown between 16 May and 26 May in the Nunivak Island District during the 2000 season. One survey was made under fair conditions. During an aerial survey on 24 May, 2,753 st of herring were observed. Total biomass was assumed to be 3,487 st based on aerial surveys. About 5 miles of spawn were observed during aerial surveys with peak spawning (2 miles) observed on 21 May. Spawning activity was documented at various locations on the east and south shores of Nunivak Island.

2000 marked the inaugural year for cooperative purse seine fishing in the Nunivak Island District. In the winter of 2000 the Board of Fisheries adopted regulations that allowed for the development of a cooperative herring purse seine fishery in the Nunivak Island District. The fishery was opened for 93 consecutive hours beginning at 8 PM 20 May. The fishery closed at 5 PM on 24 May. Ninety-two fish were sampled from the three sets that were sold. This sample was insufficient to characterize the age composition of the catch or the escapement so once again, age composition information was interpolated from data collected by the Nelson Island test fish crew.

Central Kuskokwim Bay

The Central Kuskokwim Bay area extends from Jacksmith Bay, south of Quinhagak, to the Ishkowiik River (Figure 1). No commercial herring fishing districts are located in this area. Five aerial surveys were flown in this area from 2 May to 12 May. The last flight on 12 May was flown under satisfactory conditions. During a survey flown on 12 May an estimated 209 st of herring were observed. No spawn was observed during these surveys.

SUBSISTENCE FISHERY

Subsistence fishing for Pacific herring in the northeastern Bering Sea is very important in villages of the Yukon-Kuskokwim River delta. The subsistence fishery is conducted primarily by residents of the coastal villages of Kwigillingok, Kongiganak, Kipnuk, Chefornak, Toksook Bay, Umkumiut, Nightmute, Tununak and Newtok. The herring stocks utilized by the subsistence fishery are the same ones targeted by the commercial fishery in the nearby commercial fishing districts.

Subsistence harvest surveys have occurred annually in Nelson Island villages from 1985 to 1996 and sporadically in Kuskokwim delta villages since 1975. Average annual herring subsistence harvests have been at least 110 tons since 1975 (Burkey et al. 1998). No subsistence surveys were conducted of Kuskokwim Area communities in 2000. Subsistence survey results reflect harvest trends and reported catches represent minimum figures because not all fishers are contacted and other Kuskokwim River delta villages were not surveyed.

COMMERCIAL FISHERY

Security Cove District

The 2000 harvest in the Security Cove District was 284 st of sac roe herring with an average roe content of 10.7%, 15 st of bait herring and one ton of waste, for a total of 299 tons. There is no directed bait herring fishery within the Kuskokwim Bay Districts; resulting bait sales occur if herring delivered fail to meet the processor's minimum standards for roe content.

Ten processors bought herring from 79 permit holders who made 162 deliveries in five fishing periods with 14 hours total fishing time. The estimated exvessel value was \$62,000. The exploitation rate was 5.7% based on the aerial survey biomass estimation of 5,237 st.

On 13 May, the first fishing period opened for 2 hours starting at 4:30 PM (Table 20). Twenty-four permit holders delivered 32.1 st of sac roe quality herring with an average roe content of 6.9%. The second opening occurred on 18 May for two hours starting at 9:00 AM. Sixty-nine permit holders delivered 169.7 st of herring with a 10.9 % average roe content. The final period was for five hours on 19 May starting at 7:00 PM. One permit holder delivered 0.2 st of herring with an average roe content of 9.0%.

Due to budget cuts no herring were sampled from the commercial catch in the Security Cove District in 2000.

Goodnews Bay District

The 2000 harvest was 18.5 st of sac roe herring with an average roe content of 9.2 % with 1.3 st of bait quality herring. No waste herring was reported. Three processors bought herring from 57 permit holders who made 87 deliveries in 5 fishing periods with 49 hours total fishing time. The

estimated exvessel value was \$3,000. The exploitation rate was 0.3% based on an aerial survey derived estimated biomass of 6,348 st.

Commercial harvest of herring at Goodnews Bay was hampered by several factors. The arrival of fish on the spawning areas was earlier than 1999 by almost three weeks. Due to the early arrival of fish, a protracted season in the Togiak District, which delayed the arrival of the processor fleet, and a delayed breakup on the Kuskokwim River, which delayed the arrival of fishermen on the grounds, the harvest was small compared to most other years. Basically, the fish came early and all the other factors affecting the fishery happened late, causing the fleet to miss most of the herring run in 2000.

On 18 May, the first fishing period opened for 4 hours at 6:00 PM. Nine permit holders delivered 0.2 st of sac roe herring with an 8.8% average roe content. Peak harvest occurred on 26 May when 26 permit holders delivered 7.5 st during a 3-hour opener. The last period was on 28 May when 10 permit holders delivered 3.9 st. Between 18 May and 28 May there were 5 fishing periods for a total of 49 hours fishing time. Catches ranged from 0.8 st on 27 May to 7.5 st on 26 May (Table 20).

Test fish crews sampled a total of 98 herring from the commercial catch. Age composition was 80% age 9 or older, 16% age 6-8, and 4 % less than age 6 in numbers of fish (Table 19).

Cape Avinof District

The 2000 harvest was 369.8 st of sac roe herring with an average roe content of 9.6% and 7.4 st of bait herring for a total harvest of 377.2 st. One processor bought herring from 86 permit holders who made 399 deliveries in ten fishing periods with a total fishing time of 58 hours. The estimated exvessel value was \$71,000. The exploitation rate was 11.8% based on a preseason biomass projection of 3,210 st.

On 4 June the first fishing period opened for four hours starting at 11:00 AM. Twenty-three permit holders delivered 6.1 st of herring with a 9.3% average roe content. Between 4 June and 10 June there were 10 fishing periods for a total of 58 hours of fishing time. Catches ranged from 1.6 st on 6 June to 98.2 st on 8 June (Table 20).

A total of 206 herring were sampled from the commercial catch in the Cape Avinof District in 2000. Age composition was 66% age 9 or older and 26% age 6-8 in numbers of fish (Table 19).

Nelson Island District

The 2000 harvest was 754 st of sac roe herring with an average roe content of 9.8% and 52 st of bait herring. No waste was reported. Four processors bought herring from 86 permit holders who made 354 deliveries in three fishing periods with a total fishing time of 20 hours. The estimated exvessel value was \$150,000. The exploitation rate was 17.3% based on a biomass estimate of 4,672 st. Aerial surveys were conducted under largely unsatisfactory conditions in 2000 so the biomass estimate was derived from the preseason projection.

On 28 May, the first fishing period opened for 4 hours starting at 6:00 PM (Table 20). Fifteen permit holders delivered 23.5 st of sac roe quality herring with a 10.1% average roe content. The second period was for six hours beginning 5:00 PM on 29 May. Seventy-one permit holders harvested 176 st of sac roe herring with an average roe content of 10.1%. The last period was for six hours starting at 6:00 PM on 30 May. Catch from this period was 411 st of herring with 9.7% average roe content.

A total of 423 herring were sampled from the commercial catch. Age composition was 65% age 9 or older and 17% age 6-8 in numbers of fish (Table 19).

Nunivak Island District

The 2000 harvest was 41 st of sac roe herring with an average roe content of 9.0. The estimated exvessel value was \$12,000. The exploitation rate was 1.2% based on a biomass estimate of 3,487 st.

On 20 May the fishery opened for 93 consecutive hours for the commercial harvest of herring using purse seine gear. Nunivak Island District is the only herring district in the Kuskokwim Bay Area where herring may be harvested by purse seine gear. The Board of Fisheries made this gear type legal during the winter of 1999-2000 to determine the feasibility of a cooperative fishery with this gear type. The regulation instating this fishery is scheduled to sunset on 31 December 2000 and will be reevaluated during the Board meetings in January 2001.

Enforcement

The Division of Fish and Wildlife Protection (FWP) was present in the Goodnews Bay and Security Cove Districts this year. Two personnel from FWP were involved in Kuskokwim Bay herring fisheries. Enforcement officers utilized a single supercub aircraft. The FWP vessel Walstad was on hand for the Security Cove District fishery.

OUTLOOK AND MANAGEMENT STRATEGY FOR 2001

Projections from postseason escapement estimates, using historical mean rates of survival, current mean weights for each age class, and estimates of recruitment for each age class (Wespedstad 1982), suggest that the 2001 spawning biomass for the Kuskokwim Bay herring stocks (Security Cove to Nunivak Island) will be approximately 21,150 st with a projected harvest of 3,855 st (Table 21). If the return is as expected, a moderate increase over the projected 2000 biomass will be observed in the Security Cove, Goodnews Bay, and Nunivak Island districts while a moderate decrease in biomass will be observed in the Cape Avinof and Nelson Island districts. However, variability in the quality of aerial survey assessments of biomass and deviations from the assumed survival or recruitment rates may result in the observed biomass being either above or below these projections. Therefore, harvest levels will be adjusted during the season according to observed herring spawning biomass. In addition, in accordance with the AYK Region harvest policy, newly recruited age classes (age 2 through 5-

year-old herring) will not be targeted by the commercial fishery. If it is not possible to determine herring abundance using aerial survey methods, stock abundance will be assessed using information from the projected biomass, test and commercial catches and spawn deposition observations.

Security Cove District

The 2001 projected return to the Security Cove District is 4,527 st. A 20% exploitation rate would result in a harvest of 905 st (Table 21). A larger catch may occur if the 2001 biomass assessment is greater than the projection. Commercial fishing will not be allowed until the observed biomass reaches 1,200 st or significant spawning activity is observed. The occurrence and length of fishing periods will depend on stock strength, fishing effort, and spawning activity.

Age 5 and 8 herring are expected to be the dominant age classes in the 2001 return. Age 9 and older herring are expected to comprise approximately 50% of the biomass. No herring were sampled from the Security Cove District in 2000. The age structure of herring samples from the Goodnews Bay District in 2000 was used to project the 2001 herring return to the Security Cove District.

Goodnews Bay District

The management strategy for this district will be similar to that planned for Security Cove. The season will open and close by emergency order when a biomass of 1,200 st is observed or spawning activity occurs. The 2001 projected return of herring to the Goodnews Bay District is 5,755 st. A 20% exploitation rate would result in a harvest of 1,151 st (Table 21). A larger catch may occur if the 2001 biomass assessment is greater than the projection.

In Goodnews Bay, age 5 and 8 herring are expected to be the dominant age classes in 2001. Age 9 and older herring are expected to comprise 50% of the biomass.

Cape Avinof District

Either significant spawning activity or a biomass of 500 st must be observed before the commercial herring season can be opened. The projected 2001 biomass for the Cape Avinof District is 3,486 st (Table 21). The exploitation rate will be no greater than 15% because of the limited database for this area and the priority of subsistence fishing. Assuming a 15% commercial exploitation rate, the projected harvest would be 523 st of herring.

Age 5 and 11 herring are expected to dominate the returning population in Cape Avinof in 2001. Age 9 and older herring are expected to comprise approximately 25-30% of the biomass.

Nelson Island District

In the Bering Sea Herring Fishery Management Plan, the Alaska Board of Fisheries set a minimum biomass threshold of 3,000 st necessary for a commercial herring fishery in the Nelson

Island District. The inseason estimate of herring biomass must exceed the threshold level before a commercial fishery can be allowed. The spawning biomass projected to return to the Nelson Island District in 2001 is 3,971 st (Table 21). The Board of Fisheries has set the exploitation rate for 2001 at 15%. This translates to a harvest of 594 st of herring. A larger catch may occur if the 2001 biomass assessment is greater than the projection. Guidelines established by the Board of Fisheries (see page 101) that provide additional protection for the subsistence harvest of herring will be followed.

Age 8 is expected to be the dominant age group in 2001. Age 9 and older herring are expected to comprise between 35-40% of the biomass in 2001.

Nunivak Island District

The commercial season will open when the biomass reaches 1,500 st or when significant spawning is observed. The projected biomass of herring returning to the Nunivak Island District in 2001 is 3,411 st. A 20% exploitation rate would result in a 682 st harvest (Table 21). A larger catch may occur if the 2001 biomass assessment is greater than the projection.

Age 8 is expected to be the dominant age group in the 2001 return. Age 9 and older herring are expected to comprise between 35-40% of the return. The age composition of herring sampled in the Nelson Island District in 2000 was used to project the 2001 herring return for the Nunivak Island District.

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TABLES

Table 1. Salmon run assessment programs operated in the Kuskokwim Area during 2000.

Project Name	Location	Primary Objectives	Duration	Agency	Responsibility
Salmon Management Plan	Kuskokwim Area	- develop a comprehensive plan for managing salmon stocks of the Kuskokwim Area. - define goals and objectives. - identify potential opportunities and concerns. - recommend appropriate procedures. - evaluate priorities.	June - Sept.	ADFG/CF	all aspects
Subsistence Catch and Effort Assessment	Kuskokwim Area	- document and estimate the catch and associated effort of the subsistence salmon fisheries via interviews, catch calendars, mail-out questionnaires and telephone interviews.	Post-season	ADFG/S	all aspects
Escapement Sampling	Kuskokwim Area	- estimate age, sex and length of chinook, sockeye, chum and coho salmon from selected tributary spawning populations.	June - Sept	ADFG/CF	all aspects
Aerial Surveys	Kuskokwim Area	- index relative abundance of chinook salmon spawning escapement in selected streams throughout the Kuskokwim Area. - index relative abundance of sockeye salmon spawning escapement in the Kanektok and Goodnews Rivers.	July - Aug	ADFG/CF	all aspects
Sport Catch, Harvest and Effort Assessment	Kuskokwim Area	- statewide mail-out survey to estimate sport catch, harvest and effort	post-season	ADFG/SF	all aspects
Commercial Catch and Effort Assessment	Districts 1, 2, 4 and 5	- document and estimate the catch and associated effort of the commercial salmon fishery via receipts (fish tickets) of commercial sales and dock side sampling.	June - Sept	ADFG/CF	all aspects
Commercial Catch Sampling	Districts 1, 4 and 5	- determine age, sex, and length of salmon harvested in the commercial fisheries.	June - Sept	ADFG/CF	all aspects
Bethel Test Fishery	Bethel Area RM. 80	- index relative run timing of chinook, sockeye, chum and coho salmon using drift gillnets - index relative run abundance of chinook, sockeye, chum and coho salmon using CPUE derived from drift gillnet catches.	June - Aug	ADFG/CF	all aspects
				ONC	crew support
Kwethluk River Weir	mile 51 Kwethluk River RM. 99	- estimate daily escapement of chinook, sockeye, chum and pink salmon into the Kwethluk River. - estimate age, sex and length composition of chinook, chum and coho salmon escapement. - collect environmental / habitat information	June - July	USFWS	all aspects
				ADFG/CF	planning
				KIRA	& crew support
Aniak River Sonar	mile 12 Aniak River RM. 225	- estimate daily escapement of salmon into the Aniak River. - estimate age, sex and length composition of chum salmon escapement	June - July	NOAA	funding
				ADFG/CF	all aspects
				AVCP	crew support
				NOAA	funding

- continued -

Table 1. (page 2 of 2)

Project Name	Location	Primary Objectives	Duration	Agency	Responsibility
George River Weir	mile 4 George River RM. 309	- estimate daily escapement of chinook, sockeye, chum, pink and coho salmon into the George River. - estimate age, sex and length composition of chinook, chum and coho salmon escapement. - collect environmental / habitat information	June - Sept	KNA	all aspects
				ADFG/CF	all aspects
				BSFA FSO NOAA	funding
Kogrukuk River Weir	mile 85 Holitna River Drainage RM. 335	- estimate daily escapement of chinook, sockeye, chum and coho salmon into the Kogrukuk River. - estimate age, sex and length composition of chinook, chum and coho salmon escapement	June - Sept	ADFG/CF	all aspects
				NOAA	funding
Tatlawiksuk River Weir	mile 2.5 Tatlawiksuk River RM. 383	- estimate daily escapement of chinook, sockeye, chum, pink and coho salmon into the Tatlawiksuk River. - estimate age, sex and length composition of chinook, chum and coho salmon escapement. - collect environmental / habitat information	June - Sept	KNA	all aspects
				ADFG/CF	all aspects
				BSFA NOAA FSO	funding
Takotna River Weir	mile 35 Takotna River RM. 507	- estimate daily escapement of chinook and chum salmon into the Takotna River. - estimate age, sex and length composition of chinook, chum and coho salmon escapement. - collect environmental / habitat information	June - July	TCS	all aspects
				ADFG/CF	planning & supplies
				BSFA NOAA USFWS	funding
Kanektok River Weir	mile 13 Kanektok River Kuskokwim Bay	- estimate daily escapement of chinook, sockeye, chum pink and coho salmon into the Kanektok River. - estimate age, sex and length composition of chinook and chum salmon escapement.	June - Sept	NVK	all aspects
				ADFG/CF	planning & supplies
				USFWS	planning, supplies and funding
Middle Fork Goodnews River Weir	mile 5 Middle Fork Goodnews River Kuskokwim Bay	- estimate daily escapement of chinook, sockeye, chum, pink and coho salmon into the Middle Fork Goodnews River. - estimate age, sex and length composition of chinook, sockeye, chum and coho salmon escapement	June - Sept	BSFA BIA	funding
				ADFG/CF	all aspects
				USFWS	funding for coho extension

ADFG/CF = Commercial Fisheries Division; Alaska Department of Fish and Game
 ADFG/S = Subsistence Division; Alaska Department of Fish and Game
 ADFG/SF = Sport Fish Division; Alaska Department of Fish and Game
 AVCP = Association of Village Council Presidents
 BIA = Bureau of Indian Affairs
 BSFA = Bering Sea Fishermen's Association
 FSO = Federal Subsistence Office

KNA = Kuskokwim River Native Association
 NOAA = National Oceanic and Atmospheric Administration
 NVK = Native Village of Kwinhagak
 ONC = Orutsarmuit Native council
 TCS = Takotna Charter School
 USFWS = U.S. Fish and Wildlife Service

Table 2. Kuskokwim Area salmon entry permits issued by village, 1998 - 2000^a

Village	1998	1999	2000
Akiachak	67	67	67
Akiak	24	23	23
Aniak	11	10	11
Atmautluak	28	26	28
Bethel	169	167	162
Chefornak	3	3	3
Chuathbaluk	2	1	1
Eek	37	37	38
Goodnews Bay	28	27	26
Kalskags	7	7	5
Kasigluk	43	44	44
Kipnuk	15	15	15
Kongiganak	19	20	18
Kwethluk	55	56	57
Kwigillingok	18	19	19
Mekoryuk	1	0	0
Napakiak	39	39	28
Napaskiak	36	34	32
Nunapitchuk	46	46	47
Oscarville	1	1	1
Platinum	4	5	5
Quinhagak	84	84	84
Sleetmute	1	1	1
Tuluksak	27	27	27
Tuntutuliak	43	43	42
Tununak	1	1	0
<i>Kuskokwim Area Subtotal</i>	809	803	784
Anchorage	11	12	15
Dillingham	1	1	1
Fairbanks	1	1	1
Kenai	0	0	1
Kodiak	0	0	1
Manokotak	1	1	1
Sterling	0	0	1
Twin Hills	0	1	1
Wasilla	1	1	1
<i>Non-Local Alaska Resident Subtotal</i>	15	17	23
Alpharetta, GA	1	1	1
Comstock, TX	1	1	1
Florence, OR	1	0	0
Honey in the Hills, FL	1	1	0
Tacoma, WA	1	1	1
Valencia, CA	1	1	1
<i>Non-Resident Subtotal</i>	6	5	4
<i>Total Number of Permits</i>	830	825	811

^a Number of permits that were renewed.

Table 3. Harvest and exvessel value of Kuskokwim Area salmon catch by district, 2000.

Lower Kuskokwim River, District W-1						
	<u>Chinook</u>	<u>Sockeye</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u>	<u>Total</u>
			<u>2000</u>			
Fish	444	4,130	259,703	7	11,570	275,854
Pounds	7,609	29,127	1,748,730	25	79,667	1,865,158
Price	0.40	0.49	0.28	0.10	0.10	
Value	\$3,044	\$14,272	\$489,644	\$3	\$7,967	\$514,929
			<u>Ave. 1990-99</u>			
Fish	22,596	57,745	453,984	4,969	251,694	790,988
Value	\$174,391	\$291,342	\$1,413,281	\$1,319	\$392,909	\$2,273,242
Middle Kuskokwim River, District W-2						
			<u>2000</u>			
Fish	0	0	1,676	0	1	1,677
Pounds	0	0	10,851	0	8	10,859
Price			0.28		0.10	
Value	\$0	\$0	\$3,038	\$0	\$1	\$3,039
			<u>Ave. 1990-99</u>			
Fish	817	1,120	14,671	25	9,618	26,251
Value	\$7,682	\$5,855	\$46,109	\$12	\$13,873	\$73,530
Quinhagak, District W-4						
			<u>2000</u>			
Fish	21,229	68,557	30,529	3	30,553	150,871
Pounds	335,900	453,588	228,753	9	239,287	1,257,537
Price	0.39	0.55	0.27	0.10	0.10	
Value	\$131,001	\$249,473	\$61,763	\$1	\$23,929	\$466,167
			<u>Ave. 1990-99</u>			
Fish	20,851	62,963	59,978	12,619	56,394	212,805
Value	\$154,507	\$280,465	\$199,497	\$3,047	\$78,723	\$716,238
Goodnews Bay, District W-5						
			<u>2000</u>			
Fish	4,442	37,252	15,531	7	7,450	64,682
Pounds	64,035	266,742	128,476	21	60,005	519,279
Price	0.40	0.55	0.27	0.10	0.10	
Value	\$25,614	\$146,708	\$34,689	\$2	\$6,001	\$213,013
			<u>Ave. 1990-99</u>			
Fish	2,433	39,322	19,690	3,699	15,511	80,656
Value	\$18,514	\$184,979	\$78,280	\$882	\$22,515	\$305,169
Kuskokwim Area Total						
			<u>2000</u>			
Fish	26,115	109,939	307,439	17	49,574	493,084
Pounds	407,544	749,457	2,116,810	55	378,967	3,652,833
Price	0.39	0.55	0.28	0.10	0.10	
Value	\$159,659	\$410,454	\$589,135	\$6	\$37,897	\$1,197,149
			<u>Ave. 1990-99</u>			
Fish	46,697	161,151	548,323	21,312	333,216	1,110,699
Value	\$355,093	\$762,640	\$1,737,167	\$5,260	\$508,020	\$3,368,180
Avg weight	15.6	6.8	6.9	3.2	7.6	

Table 4. Executive summary of working group and department actions, 2000.

Date	Comment
15 June	<p>Frank Charles (Kuskokwim Fisherman's Coop) and Wayne Morgan (Middle River Subsistence Fisher) were elected Co-Chairs of the Working Group for the 2000 season. Peter Zukar Sr. (Upriver Elder) and Nick Lupie (Downriver Elder) resigned due to health reasons. Topics discussed were recruitment of new Working Group members, the outlook for the 2000 salmon returns, 2000 Kuskokwim River Salmon Management Plan, Working Group By-Laws revision, and salmon run assessment projects for the 2000 season.</p>
26 June	<p>Executive session: The Working Group heard reports from subsistence fishers and the department concerning the status of Kuskokwim River salmon runs. Salmon run timing appears to be late or weak based on the Bethel test fishery and subsistence reports. Subsistence fishers in the lower Kuskokwim report low catch rates and that they need to fish longer to meet their catch goals. Subsistence fishers in the middle and upper Kuskokwim report that chinook and chum salmon abundance and catches are poor for this date.</p> <p><u>Dept. recommendation:</u> Working Group meet again at the call of the chair to reevaluate salmon run strength.</p> <p><u>Working Group recommendation:</u> Four-hour commercial fishing period in Subdistrict W-1B (below Bethel) on Wednesday, June 28. The Department and USF&WS did not support the Working Group's recommendation</p> <p><u>Actual outcome:</u> The Working Group met again on 29 June.</p>
29 June	<p>Executive session: The Working Group heard reports from subsistence fishers and the department concerning the status of Kuskokwim River salmon runs. All five escapement projects, Bethel test fishery and subsistence catches indicate that the chinook, and chum runs are weak. Subsistence fishers report having to fish longer than usual to meet their catch goals. Subsistence fishers in the middle and upper Kuskokwim report that salmon catches and abundance are poor.</p> <p><u>Dept. recommendation:</u> Working Group meet again at the call of the chair when chum salmon run strength improves.</p> <p><u>Working Group recommendation:</u> Accept Department's recommendation.</p> <p><u>Actual outcome:</u> The Working Group met again on 3 July.</p>

- continued -

Table 4. (page 2 of 5)

Date	Comment
3 July	<p>Executive session: The chinook salmon run appears to be weak based on subsistence catch reports, Bethel test fishery and escapement counts. Chum salmon run strength is increasing and appears to be large enough to provide a harvestable surplus. Subsistence chum and sockeye salmon needs are being met in the lower Kuskokwim while middle and upper Kuskokwim subsistence fishers report that salmon catches are increasing but are below average for this date.</p> <p><u>Dept. recommendation:</u> Four-hour commercial fishing period in Subdistrict W-1B on July 5 from 1:00 PM to 5:00 PM. and meet again on July 8 or July 9.</p> <p><u>Working Group recommendation:</u> Four-hour commercial fishing period in Subdistrict W-1B on July 5 from 1:00 PM to 5:00 PM. and meet again on July 7.</p> <p><u>Actual outcome:</u> Four-hour commercial fishing period in Subdistrict W-1B on July 5 from 1:00 PM to 5:00 PM. and meet again on July 7.</p>
7 July	<p>Executive session: Chinook and chum salmon runs appears to be extremely weak based on commercial and subsistence catch reports, the Bethel test fishery and passage at escapement projects. The department can not justify further commercial fishing in the Kuskokwim River.</p> <p><u>Dept. recommendation:</u> The chum salmon commercial fishery be closed for the season and the Working Group meet again at the call of the chair when coho salmon passage warrants consideration of further commercial fishing.</p> <p>The Working Group rejected a motion to accept the Department's recommendation.</p> <p><u>Working Group recommendation:</u> Continue to monitor the salmon runs and meet again at the call of the chair.</p> <p><u>Actual outcome:</u> Working Group met again on 21 July.</p>
21 July	<p>Executive session: The Working Group heard reports form subsistence fishers and the Department concerning the status of Kuskokwim River salmon runs. All indicators of chinook and chum salmon run strength show the run to be extremely weak and inadequate to meet subsistence and escapement needs. The Working Group discussed the coho salmon management plan for this season.</p> <p><u>Dept. recommendation:</u> The Working Group meet again at call of Chair when coho salmon passage warrants consideration of commercial fishing and the anticipated incidental catch of chum salmon would be below 1000 fish.</p> <p><u>Working Group recommendation:</u> Accepted department's recommendation.</p> <p><u>Actual outcome:</u> Working Group met again on 26 July.</p>

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Table 4. (page 3 of 5)

Date	Comment
26 July	<p>The Working Group heard reports from subsistence fishers and the department concerning the status of Kuskokwim River salmon runs. Many subsistence fishers report that they were not able to meet their harvest goals for chinook salmon due to low abundance and plan on increasing their harvest of coho salmon to make up for poor harvests of chinook and chum salmon. Because many subsistence users will be relying more heavily on coho salmon, it is necessary to manage the commercial coho fishery more conservatively than normal. The department can not justify commercial fishing in the Kuskokwim River at this time.</p> <p>Dept. recommendation: Meet again on 31 July August to reassess salmon run strength.</p> <p><u>Working Group recommendation:</u> Meet again at call of chair.</p> <p><u>Actual outcome:</u> Working Group met again on 31 July.</p>
31 July	<p>Executive session: Coho run strength appears to be average to above average at this time. Because many subsistence users will be relying more heavily on coho salmon, it is necessary to manage the commercial coho fishery more conservatively than normal.</p> <p><u>Dept. recommendation:</u> Four-hour commercial period in Subdistrict W-1B (below Bethel) on August 1 from 1:00 PM to 5:00 PM.</p> <p><u>Working Group recommendation:</u> Accepted department's recommendation.</p> <p><u>Actual outcome:</u> Four-hour commercial period in Subdistrict W-1B (below Bethel) on August 1 from 1:00 PM to 5:00 PM.</p>
3 August	<p>Coho salmon run strength appears to be average to above average based on run assessment data. Subsistence fishers report strong catches of coho in the lower, middle, and upper Kuskokwim River.</p> <p><u>Dept. recommendation:</u> Six-hour commercial fishing period in Subdistrict W-1A (above Bethel) on August 4 from 1:00 PM to 7:00 PM and a six-hour commercial fishing period in Subdistrict W-1B (below Bethel) on August 5 from 1:00 PM to 7:00 PM.</p> <p><u>Working Group recommendation:</u> Accepted department's recommendation.</p> <p><u>Actual outcome:</u> Six-hour period in District W-1A (above Bethel) on August 4 from 1:00 PM to 7:00 PM and a six-hour commercial fishing period in Subdistrict W-1B (below Bethel) on August 5 from 1:00 PM to 7:00 PM.</p>

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Table 4. (page 4 of 5)

Date	Comment
7 August	<p>Coho salmon run strength continues to be average to above average based on run assessment data. Subsistence fishers report strong catches of coho in the lower, middle, and upper Kuskokwim River.</p> <p><u>Dept. recommendation:</u> Six-hour commercial fishing period in Subdistrict W-1A (above Bethel) on August 8 from 1:00 PM to 7:00 PM and a six-hour commercial fishing period in Subdistrict W-1B (below Bethel) on August 9 from 1:00 PM to 7:00 PM</p> <p><u>Working Group recommendation:</u> Accepted department's recommendation.</p> <p><u>Actual outcome:</u> Six-hour period in District W-1A (above Bethel) on August 8 from 1:00 PM to 7:00 PM and a six-hour commercial fishing period in Subdistrict W-1B (below Bethel) on August 9 from 1:00 PM to 7:00 PM.</p>
11 August	<p>All indicators of coho salmon run strength continue show the coho run to be average to above average.</p> <p><u>Dept. recommendation:</u> Six-hour commercial fishing period in Subdistrict W-1A (above Bethel) on August 12 from 1:00 PM to 7:00 PM and a six-hour commercial fishing period in Subdistrict W-1B (below Bethel) on August 14 from 1:00 PM to 7:00 PM</p> <p><u>Working Group recommendation:</u> Accepted department's recommendation and recommended a six-hour commercial fishing period in District W-2 on August 12 from 1:00 PM to 7:00 PM.</p> <p><u>Actual outcome:</u> Six-hour period in District W-1A (above Bethel) and District W-2 on August 8 from 1:00 PM to 7:00 PM and a six-hour commercial fishing period in Subdistrict W-1B (below Bethel) on August 9 from 1:00 PM to 7:00 PM.</p>
16 August	<p>All indicators of coho salmon run strength continue show the coho run to be average to above average. Passage of coho salmon at escapement projects is increasing significantly and escapement goals are being met.</p> <p><u>Dept. recommendation:</u> Six-hour commercial fishing period in Subdistrict W-1A (above Bethel) on August 17 from 1:00 PM to 7:00 PM and a six-hour commercial fishing period in Subdistrict W-1B (below Bethel) on August 18 from 1:00 PM to 7:00 PM.</p> <p><u>Working Group recommendation:</u> Accepted department's recommendation.</p> <p><u>Actual outcome:</u> Six-hour period in District W-1A (above Bethel) on August 8 from 1:00 PM to 7:00 PM and a six-hour commercial fishing period in Subdistrict W-1B (below Bethel) on August 9 from 1:00 PM to 7:00 PM.</p>

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Table 4. (page 5 of 5)

Date	Comment
20 August	<p>The recent commercial periods above and below Bethel produced below average catches. Coho salmon run timing was early this season based on Bethel test fishery and commercial catches. Passage of coho salmon at escapement projects is adequate and escapement goals are being met.</p> <p><u>Dept. recommendation:</u> Six-hour commercial fishing period in Subdistrict W-1A (above Bethel) on August 21 from 1:00 PM to 7:00 PM and a six-hour commercial fishing period in Subdistrict W-1B (below Bethel) on August 22 from 1:00 PM to 7:00 PM.</p> <p><u>Working Group recommendation:</u> Accepted department's recommendation and recommended a six-hour commercial fishing period in District W-2 on August 21 from 1:00 PM to 7:00 PM.</p> <p><u>Actual outcome:</u> Six-hour period in District W-1A (above Bethel) and District W-2 on August 21 from 1:00 PM to 7:00 PM and a six-hour commercial fishing period in Subdistrict W-1B (below Bethel) on August 22 from 1:00 PM to 7:00 PM.</p>
24 August	<p>The recent commercial periods above and below Bethel produced record low catches for that date. Coho salmon run timing was early this season based on Bethel test fishery and commercial catches. Passage of coho salmon at escapement projects is adequate and escapement goals are being met.</p> <p><u>Dept. recommendation:</u> Six-hour commercial fishing period in District W-1 (entire) on August 25 from 1:00 PM to 7:00 PM.</p> <p><u>Working Group recommendation:</u> Accepted department's recommendation.</p> <p><u>Actual outcome:</u> Six-hour period in District W-1 (entire) on August 25 from 1:00 PM to 7:00 PM.</p>
31 August	<p>Executive session: The Working Group heard reports from subsistence fishers and the Department on the status of the Kuskokwim River salmon runs. Harvest during the 25 August commercial period was a record low for that date. The Working Group discussed the upcoming Alaska Board of Fisheries meeting and reviewed the regulation proposals for the Kuskokwim Area. The Working Group was briefed on a funding proposal for support from the Federal Office of Subsistence Management. The Working Group discussed the Outlook for salmon returns to the Kuskokwim River in 2001. Returns of chinook, chum and coho salmon are expected to be below average with a high probability that chinook and chum returns will be too weak to allow commercial fishing in June and July of 2001. The Working Group will meet at the call of the chair in late September to review the 2000 Kuskokwim Area salmon season.</p>

Table 5. Salmon processors and associated data, Kuskokwim Area, 2000.

Processor	Product	District
Arctic Salmon ^a P.O. Box 578 Bethel, AK 99559	Frozen Salmon Fresh Salmon Salmon Roe	1, 2, 4 and 5
Coastal Village Seafoods, Inc 711 H Street, Suite 200 Anchorage, AK 99501	Frozen salmon Fresh salmon Salmon Roe	4 and 5
Woodbine Alaska Fish Co. P.O. Box 218 Egegik, AK 99579	Frozen Salmon Canned Salmon Salmon Roe	1 and 4

a Custom processed salmon from Districts 4 and 5 for Coastal Village Seafoods

Table 6. Commercial salmon harvest and fishing effort by period in Kuskokwim River Districts 1 and 2, and both districts combined, 2000.

Period	Date	Hours	Permits	Chinook		Sockeye		Chum		Pink		Coho	
				Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE
District 1													
1 ^a	7/5	4	224	357	0.40	3,658	4.08	11,026	12.31	4	0.00		
2 ^a	8/1	4	248	12	0.01	94	0.09	156	0.16			25,624	25.83
3 ^b	8/4	6	123	7	0.01	7	0.01	53	0.07			50,260	68.10
4 ^a	8/5	6	270	8	0.00	73	0.05	43	0.03	1	0.00	32,056	19.79
5 ^b	8/8	6	186	9	0.01	26	0.02	55	0.05			26,771	23.99
6 ^a	8/9	6	217	13	0.01	57	0.04	128	0.10			20,905	16.06
7 ^b	8/12	6	189	12	0.01	17	0.01	23	0.02	1	0.00	37,451	33.03
8 ^a	8/14	6	224	6	0.00	75	0.06	33	0.02	1	0.00	16,766	12.47
9 ^b	8/17	6	193	5	0.00	23	0.02	15	0.01			17,916	15.47
10 ^a	8/18	6	199	6	0.01	58	0.05	16	0.01			14,697	12.31
11 ^b	8/21	6	158	4	0.00	3	0.00	10	0.01			8,577	9.05
12 ^a	8/22	6	143	1	0.00	32	0.04	4	0.00			4,489	5.23
13	8/25	6	106	4	0.01	7	0.01	8	0.01			4,191	6.59
District 1 Subtotal		74	532	444		4,130		11,570		7		259,703	
District 2													
1	8/12	6	4	0		0		1		0		1,237	51.54
2	8/21	6	2	0		0		0		0		439	36.58
District 2 Subtotal		12	4	0		0		1		0		1,676	
Districts 1 & 2 Total		86	536	444		4,130		11,571		7		261,379	

a Subdistrict W-1B only

b Subdistrict W-1A only

Table 7. Commercial harvest by subdistrict, Kuskokwim River District W-1, 2000.

Date	Period	Commercial Harvest (No. of fish)									
		Effort		Chinook		Sockeye		Chum		Coho	
		W 1-B	W 1-A	W 1-B	W 1-A	W 1-B	W 1-A	W 1-B	W 1-A	W 1-B	W 1-A
5-Jul	1	224		357		3,658		11,026			
1-Aug	2	248		12		94		156		25,624	
4-Aug	3		123		7		7		53		50,260
5-Aug	4	270		8		73		43		32,056	
8-Aug	5		186		9		26		55		26,771
9-Aug	6	217		13		57		128		20,905	
12-Aug	7		189		12		17		23		37,451
14-Aug	8	224		6		75		33		16,766	
17-Aug	9		193		5		23		15		17,916
18-Aug	10	199		6		58		33		14,697	
21-Aug	11		158		4		3		10		8,577
22-Aug	12	143		1		32		4		4,489	
25-Aug	13	34	106	1	3	1	6	2	6	549	3,642
Totals		409	238	404	40	4048	82	11,425	162	115,086	144,617

Subdistrict W-1B - Kuskokwim River, District W-1, below Bethel

Subdistrict W-1A - Kuskokwim River, District W-1, above Bethel

Table 8. Peak aerial survey salmon escapement estimates in Kuskokwim Area spawning tributaries by species, 2000.^a

Location	Date	Chinook	Sockeye	Coho	Chum
KUSKOKWIM RIVER:					
Aniak River	27-Jul	714	0	-	4,470
Holokuk River	25-Jul	42	0	-	400
Oskawalik River	25-Jul	62	0	-	760
Salmon River (Pitka Fork)	26-Jul	377	0	-	0
Big Waldron (Takotna River)	25-Jul	0	0	-	0
Little Waldron (Takotna River)	25-Jul	0	0	-	0
Moore Creek (Takotna River)	25-Jul	0	0	-	0
Bonnie Creek (Takotna River)	25-Jul	0	0	-	0
Minne Creek (Takotna River)	25-Jul	0	0	-	0
4 th of July Creek (Takotna River)	25-Jul	24	0	-	12
Lincoln Creek (4th of July Creek)	25-Jul	0	0	-	0
Big Creek (Takotna River)	25-Jul	0	0	-	0
John Reek Creek (Takotna River)	26-Jul	0	0	-	0
Broken Snoshoe Creek (Nixon Fork)	26-Jul	0	0	-	0
West Fork (Nixon Fork)	26-Jul	0	0	-	1
Nixon Fork (Takotna River)	26-Jul	0	0	-	0
Cottonwood Creek (Nixon Fork)	26-Jul	0	0	-	0
Fish Creek (High Power Creek)	27-Jul	0	0	-	0
High Power Creek (Swift River)	27-Jul	0	0	-	0
Lonestar Creek (High Power Creek)	27-Jul	0	0	-	0
Deep Creek (High Power Creek)	27-Jul	0	0	-	0
Telidaside (Slow Fork)	27-Jul	0	0	-	0
Slow Fork (East Fork)	27-Jul	0	0	-	0
Jones Creek (East Fork)	27-Jul	0	0	-	0
Big Salmon Fork (Little Tonzona River)	28-Jul	0	0	-	0
Sheep Creek (Pitka Fork)	28-Jul	0	0	-	0
Unnamed Trib (Little Tonzona River)	28-Jul	14	0	-	0
Telaquana Lake (Stony River)	28-Jul	10	5580	-	0
Can Creek (Stony River)	28-Jul	9	0	-	307
Stink River (Stony River)	28-Jul	0	0	-	0
Big Waldron (Takotna River)	17-Sep	-	-	0	-
Little Waldron (Takotna River)	17-Sep	-	-	0	-
Moore Creek (Takotna River)	17-Sep	-	-	0	-
Bonnie Creek (Takotna River)	17-Sep	-	-	0	-
Minne Creek (Takotna River)	17-Sep	-	-	0	-
4th of July Creek (Takotna River)	17-Sep	-	-	215	-
Lincoln Creek (4th of July Creek)	17-Sep	-	-	57	-
Big Creek (Takotna River)	17-Sep	-	-	7	-
John Reek Creek (Takotna River)	17-Sep	-	-	0	-
Ivy Creek (Nixon Fork)	17-Sep	-	-	0	-
West Fork (Nixon Fork)	17-Sep	-	-	35	-
Nixon Fork (Takotna River)	17-Sep	-	-	53	-
Cottonwood Creek (Nixon Fork)	17-Sep	-	-	1	-
Fish Creek (High Power Creek)	17-Sep	-	-	0	-
South Fork (Kuskokwim)	27-Sep	-	-	502	-
High Power Creek (Swift River)	27-Sep	-	-	0	-
Lonestar Creek (High Power Creek)	27-Sep	-	-	0	-

-Continued-

Table 8. (Page 2 of 2).

Location	Date	Chinook	Sockeye	Coho	Chum
KUSKOKWIM RIVER:					
Deep Creek (High Power Creek)	27-Sep	-	-	0	-
Telidaside (Slow Fork)	27-Sep	-	-	0	-
Slow Fork (East Fork)	27-Sep	-	-	0	-
Jones Creek (East Fork)	29-Sep	-	-	34	-
Unnamed Trib(Little Tonzona)	29-Sep	-	-	900	-
KUSKOKWIM BAY:					
Kanektok River	25-Jul	1,744	6,045	-	2,900
Kanektok River	22-Aug	-	-	1625	-

a Peak aerial salmon escapement index count. Aerial index counts do not represent total escapement, but reflect annual spawner abundance trends when made using standard survey methods under acceptable conditions.

"-" = species not present during survey or surveyed previously

Table 9. Daily and cumulative estimates of fish passage at the Aniak River sonar site, 2000

Date	Left Bank	Right Bank	Daily Count	Cumulative Count	Percent Passage
6/26	139	1,517	1,656	1,656	1
6/27	106	1,535	1,641	3,297	2
6/28	29	985	1,014	4,311	3
6/29	108	572	680	4,991	3
6/30	172	308	480	5,471	4
7/1	612	849	1,461	6,932	5
7/2	599	1,227	1,826	8,758	6
7/3	941	3,794	4,735	13,493	9
7/4	873	4,389	5,262	18,754	13
7/5	1,242	3,238	4,480	23,234	16
7/6	1,429	3,525	4,954	28,187	20
7/7	1,462	2,824	4,286	32,474	23
7/8	1,438	3,019	4,457	36,930	26
7/9	2,458	4,483	6,941	43,871	30
7/10	2,411	5,919	8,329	52,200	36
7/11	2,106	3,457	5,563	57,763	40
7/12	3,483	4,203	7,686	65,449	45
7/13	2,495	5,586	8,082	73,531	51
7/14	1,333	2,516	3,849	77,379	54
7/15	1,227	2,043	3,270	80,649	56
7/16	1,391	1,978	3,369	84,018	58
7/17	1,533	2,214	3,747	87,765	61
7/18	1,749	2,264	4,013	91,778	64
7/19	2,265	2,978	5,242	97,021	67
7/20	2,126	3,093	5,219	102,240	71
7/21	1,746	2,299	4,045	106,285	74
7/22	2,291	2,751	5,041	111,326	77
7/23	2,501	3,630	6,131	117,457	81
7/24	2,183	3,193	5,376	122,833	85
7/25	1,873	2,360	4,233	127,066	88
7/26	1,438	1,585	3,022	130,088	90
7/27	2,100	2,278	4,378	134,466	93
7/28	1,791	1,718	3,509	137,975	96
7/29	921	982	1,903	139,878	97
7/30	989	1,031	2,020	141,897	98
7/31	1,183	1,077	2,260	144,157	100
TOTAL	52,740	91,417	144,157	144,157	

Table 10. Quinhagak, District 4 commercial salmon harvest and effort by period, 2000.

Period	Date	Hours	Permits	Chinook		Sockeye		Chum		Pink		Coho	
				Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE
1	6/15	12	55	3,015	4.57	104	0.16	385	0.58				
2	6/19	12	86	4,700	4.55	893	0.87	1,397	1.35				
3	6/22	12	101	4,893	4.04	1,466	1.21	1,457	1.20				
4	6/26	12	115	3,147	2.28	1,563	1.13	2,360	1.71				
5	6/29	12	87	1,410	1.35	8,067	7.73	4,194	4.02				
6	7/03	12	128	1,398	0.91	4,699	3.06	3,239	2.11				
7	7/06	12	84	576	0.57	12,133	12.04	4,321	4.29				
8	7/08	12	116	578	0.42	7,165	5.15	2,845	2.04				
9	7/11	12	102	351	0.29	8,320	6.80	1,914	1.56				
10	7/13	12	117	361	0.26	6,556	4.67	2,844	2.03			4	0.00
11	7/15	12	46	143	0.26	2,927	5.30	1,048	1.90			2	0.00
12	7/17	12	70	191	0.23	4,570	5.44	1,024	1.22			19	0.02
13	7/19	12	64	103	0.13	2,288	2.98	778	1.01	3	0.00	51	0.07
14	7/21	12	70	131	0.16	2,626	3.13	1,172	1.40			182	0.22
15	7/24	12	48	75	0.13	1,004	1.74	417	0.72			285	0.49
16	7/26	12	36	36	0.08	898	2.08	328	0.76			704	1.63
17	7/28	12	51	23	0.04	837	1.37	259	0.42			1,257	2.05
18	7/31	12	46	30	0.05	548	0.99	222	0.40			2,533	4.59
19	8/02	12	37	12	0.03	240	0.54	63	0.14			2,544	5.73
20	8/05	12	43	16	0.03	256	0.50	59	0.11			1,899	3.68
21	8/07	12	54	10	0.02	299	0.46	104	0.16			3,761	5.80
22	8/10	12	50	2	0.00	238	0.40	35	0.06			5,146	8.58
23	8/12	12	63	12	0.02	200	0.26	33	0.04			4,683	6.19
24	8/14	12	51	9	0.01	113	0.18	25	0.04			3,427	5.60
25	8/16	12	43	4	0.01	161	0.31	20	0.04			2,434	4.72
26	8/21	12	34	1	0.00	34	0.08	5	0.01			833	2.04
27	8/24	12	24	2	0.01	52	0.18	6	0.02			765	2.66
Totals				21,229		68,257		30,553		3		30,259	

Table 11. Preliminary outlook for the 2001 Kuskokwim Area commercial salmon harvest
(X 1,000 of fish).

Species	Management District						Kuskokwim Area Total	
	Districts 1 and 2		Distirct 4		District 5			
Chinook	0 to	1	10 to	20	2 to	4	12 to	25
Sockeye	0 to	5	40 to	70	25 to	40	65 to	115
Coho	20 to	300	10 to	60	3 to	20	33 to	380
Pink ^b	0 to	0	0 to	0	0 to	0	0 to	1
Chum	0 to	15	30 to	50	10 to	15	40 to	80
TOTAL	20 to	321	90 to	200	40 to	79	150 to	601

^a Kuskokwim River includes Districts 1 and 2.

^b Outlook is based on historic catches in odd years only.

Table 12. Goodnews Bay, District 5 commercial salmon harvest and effort by period, 2000.

Period	Date	Hours	Permits	Chinook		Sockeye		Chum		Pink		Coho	
				Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE
1	6/26	12	16	1,247	6.49	1,984	18.50	1,174	6.11				
2	6/29	12	21	1,857	7.37	3,552	14.10	1,362	5.40				
3	7/03	12	28	475	1.41	4,712	14.02	1,222	3.64				
4	7/06	12	25	120	0.40	3,430	11.43	634	2.11				
5	7/08	12	26	393	1.26	4,655	14.92	1,330	4.26				
6	7/11	12	27	90	0.28	3,247	10.02	444	1.37	4	0.01		
7	7/13	12	28	65	0.19	1,954	5.82	483	1.44				
8	7/15	12	2	2	0.08	39	1.63	0	0.00				
9	7/17	12	19	41	0.18	1,777	7.79	201	0.88				
10	7/19	12	No Commercial Harvest/ No Tenders Due to Weather										
11	7/21	12	19	24	0.11	1,936	8.49	225	0.99			6	0.03
12	7/24	12	19	36	0.16	2,138	9.38	133	0.58	3	0.01	17	0.07
13	7/26	12	20	15	0.06	1,550	6.46	66	0.28			65	0.27
14	7/28	12	20	14	0.06	1,743	7.26	41	0.17			142	0.59
15	7/31	12	20	19	0.08	1,180	4.92	50	0.21			335	1.40
16	8/02	12	No Commercial Harvest/ No Tenders Due to Weather										
17	8/05	12	18	4	0.02	479	2.22	29	0.13			593	2.75
18	8/07	12	12	9	0.06	382	2.65	13	0.09			881	6.12
19	8/10	12	22	9	0.03	529	2.00	12	0.05			2,138	8.10
20	8/12	12	22	4	0.02	427	1.62	13	0.05			2,349	8.90
21	8/14	12	29	2	0.01	409	1.18	7	0.02			3,205	9.21
22	8/16	12	23	5	0.02	395	1.43	4	0.01			1,539	5.58
23	8/18	12	19	3	0.01	229	1.00	3	0.01			1,309	5.74
24	8/21	12	27	6	0.02	207	0.64	2	0.01			1,361	4.20
25	8/24	12	22	2	0.01	298	1.13	2	0.01			1,591	6.03
Totals		300	46	4,442		37,252		7,450		7		15,531	

Table 13. Kuskokwim Area Subsistence Salmon Fishery Sampling Summary, 2000.

COMMUNITY	Total HHS	CALENDAR		POSTCARD		NUMBER OF HOUSEHOLDS				
		Mailed	Returned	Mailed	Returned	Household Surveys	Phone Surveys	Subsistence Fished*	Harvest Data**	Any Info.*
Kipnuk	176	11	0	174	11	1	0	9	12	12
Kwigillingok	95	3	0	95	0	0	0	0	0	0
Kongiganak	<u>73</u>	<u>46</u>	<u>3</u>	<u>19</u>	<u>0</u>	<u>51</u>	<u>0</u>	<u>59</u>	<u>62</u>	<u>70</u>
NORTH KUSKOKWIM BAY	344	60	3	288	11	52	0	68	74	82
Tuntutuliak	74	57	9	15	2	61	0	64	63	74
Eek	67	41	15	10	1	53	0	48	59	63
Kasigluk	135	10	4	133	15	0	0	14	19	19
Nunapitchuk	103	68	15	18	1	81	0	71	92	100
Atmautluak	52	38	4	7	2	43	0	34	48	51
Napakiak	75	52	6	15	1	47	0	48	63	73
Napaskiak	79	54	5	18	0	55	0	61	71	76
Oscarville	15	11	0	15	0	0	0	0	0	0
Bethel	1,739	594	74	286	35	1,221	0	545	1,213	1,262
Kwethluk	144	98	19	37	3	85	0	104	109	136
Akiachak	123	84	9	35	3	80	0	99	93	118
Akiak	59	43	7	17	4	34	0	40	47	54
Tuluksak	<u>76</u>	<u>59</u>	<u>6</u>	<u>16</u>	<u>2</u>	<u>53</u>	<u>0</u>	<u>59</u>	<u>63</u>	<u>73</u>
LOWER KUSKOKWIM RIVER	2,741	1,209	173	622	69	1,813	0	1,187	1,940	2,099
Lower Kalskag	63	32	5	18	4	36	0	35	51	61
Upper Kalskag	56	29	5	12	1	35	0	35	48	55
Aniak	169	108	17	19	6	141	0	94	153	162
Chuathbaluk	<u>29</u>	<u>16</u>	<u>4</u>	<u>3</u>	<u>0</u>	<u>24</u>	<u>0</u>	<u>22</u>	<u>25</u>	<u>29</u>
MIDDLE KUSKOKWIM RIVER	317	185	31	52	11	236	0	186	277	307
Crooked Creek	31	19	5	3	0	23	0	18	28	31
Red Devil	14	6	1	5	0	9	0	8	11	13
Sleetmute	34	29	8	6	1	28	0	29	30	34
Stony River	15	10	0	15	2	1	0	3	3	3
Lime Village	17	9	1	4	0	3	0	7	12	16
McGrath	113	52	5	10	5	88	0	48	103	107
Takotna	17	1	0	1	0	16	0	2	16	16
Nikolai	29	16	3	1	1	24	0	13	28	29
Telida	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
UPPER KUSKOKWIM RIVER	272	142	23	45	9	192	0	128	231	249
Quinhagak	130	87	14	28	2	79	0	82	107	121
Goodnews Bay	53	31	7	2	1	47	0	34	52	52
Platinum	<u>17</u>	<u>11</u>	<u>1</u>	<u>2</u>	<u>0</u>	<u>13</u>	<u>0</u>	<u>10</u>	<u>15</u>	<u>16</u>
SOUTH KUSKOKWIM BAY	200	129	22	32	3	139	0	126	174	189
Mekoryuk	88	21	0	88	19	0	0	15	17	19
Newtok	79	1	0	79	12	0	0	5	11	12
Nightmute	67	2	0	67	7	0	0	4	6	7
Toksook Bay	132	17	1	131	11	0	0	6	11	12
Tununak	108	1	0	108	9	0	0	4	9	9
Chefornak	<u>93</u>	<u>1</u>	<u>0</u>	<u>93</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
BERING SEA COAST	567	43	1	566	58	0	0	34	54	59
OTHER	0	0	0	0	0	0	0	0	0	0
KUSKOKWIM AREA TOTALS	4,441	1,768	253	1,605	161	2,432	0	1,729	2,750	2,985

* Includes information for an uncontacted household's fishing effort derived from another household's survey form.

** Households that did not fish and those households which did fish and provided harvest numbers.

Table 14. Subsistence Salmon Harvest Summary, Kuskokwim Area, 2000.

COMMUNITY	HOUSEHOLDS		CHINOOK		CHUM		SCKEYE		COHO	
			Reported Estimated		Reported Estimated		Reported Estimated		Reported Estimated	
	Total	Contacted	Harvest	Total	Harvest	Total	Harvest	Total	Harvest	Total
Kipnuk	176	12	170	170	269	269	179	179	223	223
Kwigillingok	95	0	0		0		0		0	
Kongiganak	73	52	1,132	1,299	1,607	1,850	1,550	1,789	292	339
N. KUSKOKWIM BAY	344	64	1,302	1,469	1,876	2,119	1,729	1,968	515	562
Tuntutuliak	74	62	2,514	2,939	2,338	2,735	1,057	1,236	2,942	3,435
Eek	67	55	1,881	2,112	566	636	781	878	434	488
Kasigluk	135	18	642	731	827	930	560	666	1,429	1,667
Nunapitchuk	103	83	2,965	3,354	4,153	4,694	1,869	2,111	324	366
Atmautluak	52	45	1,107	1,174	1,717	1,819	1,431	1,516	212	224
Napakiak	75	49	1,726	2,178	2,326	2,987	1,582	2,026	388	502
Napaskiak	79	55	3,756	4,309	2,482	2,848	2,268	2,611	778	889
Oscarville	15	0	0		0		0		0	
Bethel	1,739	1,258	17,325	22,515	8,178	10,616	9,658	12,536	10,552	13,794
Kwethluk	144	95	3,897	4,925	4,031	5,048	2,939	3,685	2,615	3,271
Akiachak	123	84	4,629	6,124	3,469	4,589	2,719	3,597	1,897	2,509
Akiak	59	40	1,760	2,190	1,975	2,456	779	970	388	483
Tuluksak	76	56	2,099	2,432	2,144	2,504	1,887	2,207	444	523
LOWER KUSKOKWIM	2,741	1,900	44,301	54,983	34,206	41,862	27,530	34,039	22,403	28,151
Lower Kalskag	63	42	1,384	1,822	1,262	1,641	674	885	328	428
Upper Kalskag	56	38	1,064	1,237	1,338	1,558	547	636	247	288
Aniak	169	148	2,837	3,117	1,769	1,943	1,040	1,143	1,749	1,922
Chuathbaluk	29	26	246	303	585	704	426	515	415	469
MIDDLE KUSKOKWIM	317	254	5,531	6,479	4,954	5,846	2,687	3,179	2,739	3,107
Crooked Creek	31	24	543	575	767	812	476	505	125	132
Red Devil	14	9	70	94	44	53	89	107	127	158
Sleetmute	34	29	382	430	346	390	675	759	490	552
Stony River	15	3	21	21	99	99	266	266	10	10
Lime Village	17	4	45	45	294	294	918	918	362	362
McGrath	113	94	605	642	152	161	40	42	660	700
Takotna	17	16	0	0	0	0	0	0	20	21
Nikolai	29	26	144	155	56	60	0	0	30	31
Telida	2	0	0		0		0		0	
UPPER KUSKOKWIM	272	205	1,810	1,962	1,758	1,869	2,464	2,597	1,824	1,966
KUSKOKWIM RIVER	3,674	2,423	52,944	64,893	42,794	51,696	34,410	41,783	27,481	33,786
Quinhagak	130	84	2,516	3,106	738	912	1,084	1,341	881	1,088
Goodnews Bay	53	48	583	601	271	280	996	1,028	404	414
Platinum	17	13	93	102	76	84	161	177	94	103
S. KUSKOKWIM BAY	200	145	3,192	3,809	1,085	1,276	2,241	2,546	1,379	1,605
Mekoryuk	88	19	2	2	2,120	2,120	7	7	78	78
Newtok	79	12	19	19	16	16	124	124	64	64
Nightmute	67	7	8	8	2	2	71	71	2	2
Toksook Bay	132	12	45	58	134	217	165	253	80	112
Tununak	108	9	52	52	44	44	48	48	23	23
Chefornak	93	0	0		0		0		0	
BERING SEA COAST	567	59	126	139	2,316	2,399	415	503	247	279
KUSKOKWIM TOTALS	4,441	2,627	56,262	68,841	46,195	55,371	37,066	44,832	29,107	35,670

NOTE: If less than 30 or 50% of households in a stratum in a community were contacted, then reported harvest is used for estimated harvest. Data also includes salmon retained from commercial harvest for subsistence use.

Table 15. Gear Types Reported Used for Subsistence Salmon Fishing, Kuskokwim Area, 2000.

COMMUNITY	Number of Households Reporting Type of Subsistence Fishing Gear Used					
	Set Gillnet	Drift Gillnet	Fish Wheel	Rod and Reel	Seine	Spear
Kipnuk	3	8	0	1	0	0
Kongiganak	4	34	0	0	0	0
NORTH KUSKOKWIM BAY	7	42	0	1	0	0
Tuntutuliak	1	45	0	1	0	0
Eek	10	28	0	3	0	0
Kasigluk	1	9	0	0	0	0
Nunapitchuk	4	45	0	1	0	0
Atmautluak	0	25	0	0	0	0
Napakiak	21	26	0	1	0	0
Napaskiak	12	44	0	1	0	0
Bethel	62	394	0	88	0	0
Kwethluk	28	55	0	15	0	0
Akiachak	14	60	0	7	0	0
Akiak	16	24	0	3	0	0
Tuluksak	16	38	0	4	0	0
LOWER KUSKOKWIM RIVER	185	793	0	124	0	0
Lower Kalskag	6	18	0	2	0	0
Upper Kalskag	4	21	0	2	0	0
Aniak	9	54	0	35	0	0
Chuathbaluk	3	13	0	3	0	0
MIDDLE KUSKOKWIM RIVER	22	106	0	42	0	0
Crooked Creek	5	11	0	1	0	0
Red Devil	1	2	0	2	0	0
Sleetmute	8	20	0	6	0	0
Stony River	2	1	0	0	0	0
Lime Village	2	0	0	1	0	0
McGrath	27	4	0	19	0	0
Takotna	0	0	0	2	0	0
Nikolai	10	0	0	3	0	0
UPPER KUSKOKWIM RIVER	55	38	0	34	0	0
Quinhagak	8	45	0	17	0	0
Goodnews Bay	18	20	0	7	0	0
Platinum	4	4	0	4	0	0
SOUTH KUSKOKWIM BAY	30	69	0	28	0	0
Mekoryuk	10	0	0	5	2	0
Newtok	1	5	0	0	0	0
Nightmute	2	3	0	0	0	0
Toksook Bay	1	5	0	0	0	0
Tununak	2	2	0	1	0	0
BERING SEA COAST	16	15	0	6	2	0
KUSKOKWIM AREA TOTALS	315	1,063	0	235	2	0

Note: Data on households that subsistence fished is based upon house to house surveys, returned postcards, or returned calendars. Households using multiple gear types are listed for each gear type they reported. Communities where gear type information was not provided are not listed.

Table 16. Salmon Reported Retained From Commercial Catches for Subsistence use, Kuskokwim Area, 2000.

COMMUNITY	HOUSEHOLDS REPORTING		NUMBER OF SALMON RETAINED FROM COMMERCIAL CATCH FOR SUBSISTENCE USE			
	Commercial Fishing	Retained Commercial Caught Salmon for Subsistence	Chinook	Chum	Sockeye	Coho
Kongiganak	19	0	0	0	0	0
N. KUSKOKWIM BAY	19	0	0	0	0	0
Tuntutuliak	40	11	18	22	15	48
Eek	32	7	23	14	13	16
Nunapitchuk	46	8	28	5	44	34
Atmautluak	23	2	0	0	0	2
Napakiak	18	2	0	0	0	16
Napaskiak	25	7	11	3	0	33
Bethel		1	2	2	0	2
Kwethluk	37	6	0	0	0	12
Akiachak	46	12	24	5	13	138
Akiak	18	5	0	10	0	37
Tuluksak	29	3	0	0	13	103
LOWER KUSKOKWIM	314	64	106	61	98	441
Lower Kalskag	1	0	0	0	0	0
Upper Kalskag	4	1	0	0	40	0
Aniak	4	0	0	0	0	0
Chuathbaluk	0	0	0	0	0	0
MIDDLE KUSKOKWIM	9	1	0	0	40	0
Crooked Creek	1	0	0	0	0	0
Red Devil	0	0	0	0	0	0
Sleetmute	0	0	0	0	0	0
Stony River	0	0	0	0	0	0
Lime Village	0	0	0	0	0	0
McGrath	0	0	0	0	0	0
Takotna	0	0	0	0	0	0
Nikolai	0	0	0	0	0	0
UPPER KUSKOKWIM	1	0	0	0	0	0
Quinhagak	36	17	30	17	24	25
Goodnews Bay	21	8	51	29	108	49
Platinum	3	0	0	0	0	0
S. KUSKOKWIM BAY	60	25	81	46	132	74
TOTAL	403	90	187	109	270	515

NOTE: Data are based upon surveyed households only without expansion to the community as a whole.

Bethel households were not asked directly if they fished commercially. Communities not listed were not surveyed house to house.

Table 17. Quality of Subsistence Salmon Fishing, Kuskokwim Area, 2000.

COMMUNITY	Number of Households Responding	Percent of Households Reporting Quality of Subsistence Fishing							
		CHINOOK		CHUM		SCKEYE		COHO	
		Very Good or Average	Poor	Very Good or Average	Poor	Very Good or Average	Poor	Very Good or Average	Poor
Kipruk	6	83	17	83	17	33	67	50	50
Kongiganak	33	55	45	59	41	62	38	47	53
N. KUSKOKWIM BAY	39	59	41	63	37	58	42	48	52
Tuntutuliak	43	79	21	72	28	78	22	80	20
Eek	32	81	19	70	30	80	20	88	12
Kasigluk	9	67	33	100	0	25	75	67	33
Nunapitchuk	46	78	22	77	23	79	21	80	20
Atmautluak	25	52	48	78	22	75	25	83	17
Napakiak	34	79	21	78	22	81	19	90	10
Napaskiak	42	57	43	62	38	93	7	50	50
Bethel	415	60	40	61	39	70	30	72	28
Kwethluk	61	38	62	53	47	91	9	84	16
Akiachak	61	70	30	61	39	80	20	76	24
Akiak	26	58	42	52	48	88	13	92	8
Tuluksak	40	60	40	51	49	79	21	73	27
LOWER KUSKOKWIM	834	62	38	63	37	76	24	74	26
Lower Kalskag	19	47	53	36	64	64	36	63	38
Upper Kalskag	21	52	48	50	50	80	20	60	40
Aniak	62	55	45	68	32	69	31	94	6
Chuathbaluk	12	58	42	86	14	63	38	100	0
MIDDLE KUSKOKWIM	114	54	46	60	40	69	31	88	12
Crooked Creek	11	45	55	44	56	88	13	100	0
Red Devil	3	33	67	100	0	100	0	100	0
Sleetmute	21	19	81	41	59	65	35	100	0
Stony River	3	33	67	0	100	100	0	0	0
Lime Village	2	0	100	0	100	100	0	100	0
McGrath	31	13	87	0	100	100	0	43	57
Takotna	1	0	100	0	0	0	0	100	0
Nikolai	11	18	82	50	50	0	0	50	50
UPPER KUSKOKWIM	83	20	80	33	68	81	19	66	34
Quinhagak	46	87	13	66	34	57	43	75	25
Goodnews Bay	29	79	21	72	28	47	53	80	20
Platinum	8	88	13	50	50	50	50	80	20
S. KUSKOKWIM BAY	83	84	16	67	33	53	47	77	23
Mekoryuk	5	0	100	93	7	0	100	63	38
Newtok	5	40	60	67	33	0	0	50	50
Nightmute	4	100	0	100	0	100	0	100	0
Toksook Bay	3	0	100	33	67	56	44	33	67
Tununak	2	50	50	33	67	0	0	33	67
BERING SEA COAST	19	37	63	76	24	50	50	57	43
KUSKOKWIM AREA TOTAL	1,172	59	41	62	38	73	27	74	26

Note: There were no responses to this survey question from Kwigillingok, Oscarville, Telida and Chefornak.

Data are from households that subsistence fished based upon household surveys and returned postcards surveys.

Table 18. Kuskokwim area Pacific herring proportion of biomass by age class, 2000.

	Age (years)												Total weight
District	2	3	4	5	6	7	8	9	10	11	12	13+	(st)
Commercial catch^a													
Security Cove ^c					2.7	14.0	11.9	23.4	23.0	10.8	5.6	8.5	299
Goodnews Bay					2.7	14.0	11.9	23.4	23.0	10.8	5.6	8.5	20
Cape Avinof		0.1	0.0	0.9	5.4	23.0	15.1	24.0	16.5	9.4	4.4	1.2	377
Nelson Island					0.9	14.2	10.0	33.6	24.2	13.7	3.0	0.3	807
Nunivak Island				2.0	3.0	22.0	10.0	29.0	26.0	5.0	3.0	0.0	41
All Districts			0.0	0.3	2.4	16.5	11.6	29.0	22.1	11.8	3.9	2.2	1,544
Test Fishery^b													
Security Cove ^c		0.1	12.7	4.1	4.9	16.9	10.9	14.4	13.7	12.2	4.8	5.3	4,938
Goodnews Bay		0.1	12.0	3.8	4.8	16.8	11.0	14.9	14.2	12.1	4.8	5.4	6,328
Cape Avinof		3.7	28.2	9.1	5.4	16.8	8.8	11.0	11.1	4.4	1.3	0.1	2,833
Nelson Island		1.1	7.8	5.3	7.9	25.2	13.8	17.0	14.3	5.8	1.4	0.4	3,865
Nunivak Island		1.1	7.8	5.3	7.9	25.2	13.8	17.0	14.3	5.8	1.4	0.4	3,446
All Districts		0.9	12.9	5.1	6.0	19.7	11.6	15.0	13.7	9.0	3.2	3.0	21,410
Total Run													
Security Cove ^c		0.1	12.0	3.8	4.8	16.8	11.0	14.9	14.3	12.1	4.8	5.4	5,237
Goodnews Bay		0.1	12.0	3.8	4.8	16.8	11.0	14.9	14.3	12.1	4.8	5.4	6,348
Cape Avinof		3.7	28.2	9.1	5.4	16.8	8.8	11.0	11.1	4.4	1.3	0.1	3,210
Nelson Island		1.1	7.8	5.3	7.9	25.2	13.8	17.0	14.3	5.8	1.4	0.4	4,672
Nunivak Island		1.1	7.8	5.3	7.9	25.2	13.8	17.0	14.3	5.8	1.4	0.4	3,487
All Districts		3.7	10.9	5.3	8.7	18.5	12.6	15.0	13.4	7.1	3.2	2.9	22,954

a Commercial drift gillnet

b ADF&G variable mesh gillnet

c No sampling in Security Cove in 1999 & 2000 due to budget cuts.

Table 19. Kuskokwim area Pacific herring age frequency by district, 2000.

District	Age (years)												Sample Size
	2	3	4	5	6	7	8	9	10	11	12	13+	
Commercial catch^a													
Security Cove ^c					4.1	16.3	12.2	23.5	21.4	10.2	5.1	7.1	98
Goodnews Bay		0.5		1.5	6.3	26.2	16.0	22.8	14.6	7.8	3.4	1.0	206
Cape Avinof					2.7	17.2	8.1	38.2	21.0	10.8	2.2	0.0	423
Nelson Island													
Nunivak Island ^d													
All Districts		0.1		0.3	3.9	19.6	10.9	31.9	19.2	9.9	2.9	1.2	727
Test Fishery^b													
Security Cove ^c													
Goodnews Bay		0.4	25.0	5.9	5.5	16.4	9.7	11.8	10.4	8.3	3.1	3.4	1,429
Cape Avinof		9.1	44.4	10.4	4.6	12.0	5.4	6.1	5.5	2.0	0.6	0.0	541
Nelson Island		3.9	16.5	7.7	8.5	23.8	11.6	12.9	10.1	3.8	0.9	0.3	1,136
Nunivak Island ^d													
All Districts		3.2	25.3	7.3	6.4	18.3	9.6	11.2	9.4	5.6	1.9	1.7	3,106
Total Run													
Security Cove ^c		0.4	23.4	5.6	5.2	15.6	10.1	11.9	11.2	9.2	3.6	4.0	-
Goodnews Bay		0.4	23.4	5.6	5.2	15.6	10.1	11.9	11.2	9.2	3.6	4.0	1,763
Cape Avinof		6.8	33.3	7.8	3.5	9.7	8.5	6.7	14.0	6.9	3.2	0.6	721
Nelson Island		2.6	10.7	5.1	6.5	22.5	11.9	19.1	13.7	6.2	1.6	0.4	1,763
Nunivak Island ^e		3.9	16.5	7.7	8.5	23.8	11.6	12.9	10.1	3.8	0.9	0.3	-
All Districts		2.4	19.8	5.8	5.5	17.5	10.6	14.0	12.7	7.6	2.7	1.9	4,247

a Commercial drift gillnet

b ADF&G variable mesh gillnet

c No samples due to budget cuts

d Samples obtained from commercial purse seine.

e Data from Nelson Island VMG.

Table 20. Summary of Pacific herring commercial harvest by fishing period for Kuskokwim Area fishing districts, 2000.

District	Period	Date	Time	Total hours	Harvest ¹ (st)
Security Cove	1	5/13	1630-1830	2.0	32.1
	2	5/18	0900-1100	2.0	169.7
	3	5/18	1900-2300	4.0	94.7
	4	5/19	1000-2400	3.0	2.1
	5	5/19	1900-2400	<u>5.0</u>	<u>0.2</u>
	Total			16.0	298.9
Goodnews Bay	1	5/18	1830-2230	4.0	1.5
	2	5/26	1530-1830	3.0	7.5
	3	5/27	1000-1800	8.0	6.2
	4	5/27	2300-0600	7.0	0.8
	5	5/28	1200-1800	<u>6.0</u>	<u>3.9</u>
	Total			28.0	19.8
Cape Avinof	1	6/4	1100-1500	4.0	6.9
	2	6/5	1100-1800	7.0	27.0
	3	6/5	2300-0500	6.0	67.0
	4	6/6	1100-1800	7.0	1.6
	5	6/6	2300-0600	7.0	1.9
	6	6/7	1200-1900	7.0	90.1
	7	6/8	0000-0700	7.0	26.7
	8	6/8	1300-2000	7.0	98.2
	9	6/9	1530-1830	3.0	42.1
	10	6/10	0530-0830	<u>3.0</u>	<u>15.7</u>
Total				58.0	377.2
Nelson Island	1	5/28	1800-2200	4.0	25.6
	2	5/29	1700-2300	6.0	184.7
	3	5/30	0800-1200	4.0	170.5
	4	5/30	1800-2400	<u>6.0</u>	<u>425.6</u>
	Total			20.0	805.8
Nunivak Island (Purse Seine)	1	5/20	open 2000	93	41.3
		5/24	closed 1700		
	Total			93	41.3

¹ Report includes estimated hopper weights for actual de-watered weights as reported by processor on fish tickets and in final catch reports. Hopper weight was estimated by adding 10%.

Table 21. Projections of Pacific herring spawning biomass and harvest for commercial fishing districts in the Kuskokwim Area, 2000.

2000 Projection ^a				
District	Biomass (st)	Threshold (st) ^b	Harvest (st)	Exploitation Rate (%)
Security Cove	4,572	1,200	905	20
Goodnews Bay	5,755	1,200	1,151	20
Cape Avinof	3,486	500	523	15
Nelson Island	3,971	3,000	594	15 ^c
Nunivak Island	<u>3,411</u>	1,500	<u>682</u>	20 ^d
Total	21,150		3,855	

a Preseason projection. Projection may be adjusted based on inseason biomass estimates.

b Threshold biomass needed to allow a commercial fishery from 5 AAC 27.060 Bering Sea Herring Fishery Management Plan.

c Nelson Island exploitation rate is 20% of projected biomass minus 200 st for subsistence harvest.

d Nunivak Island exploitation rate is 15% of projected biomass when inseason aerial survey estimate isn't available.



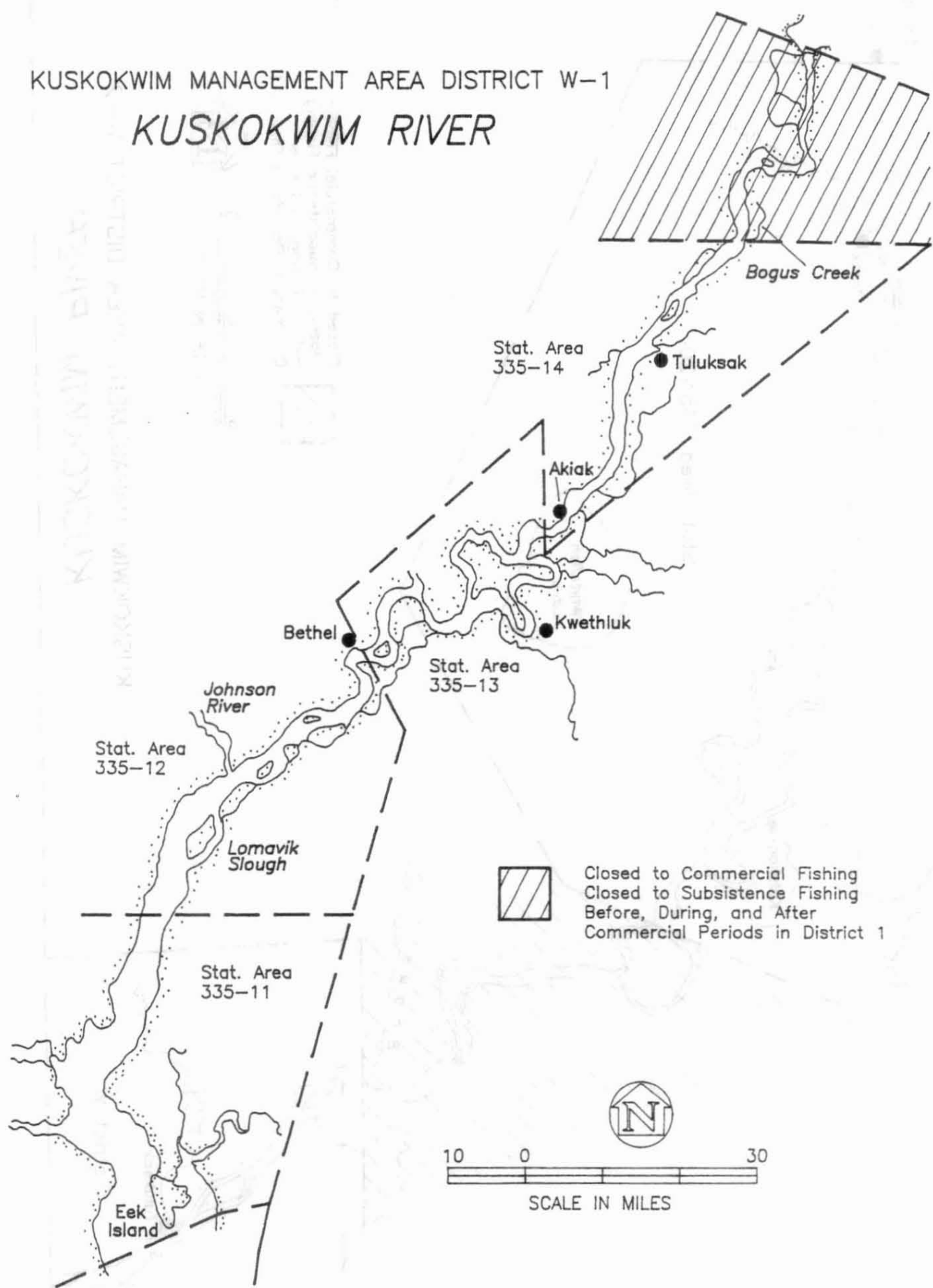
FIGURES

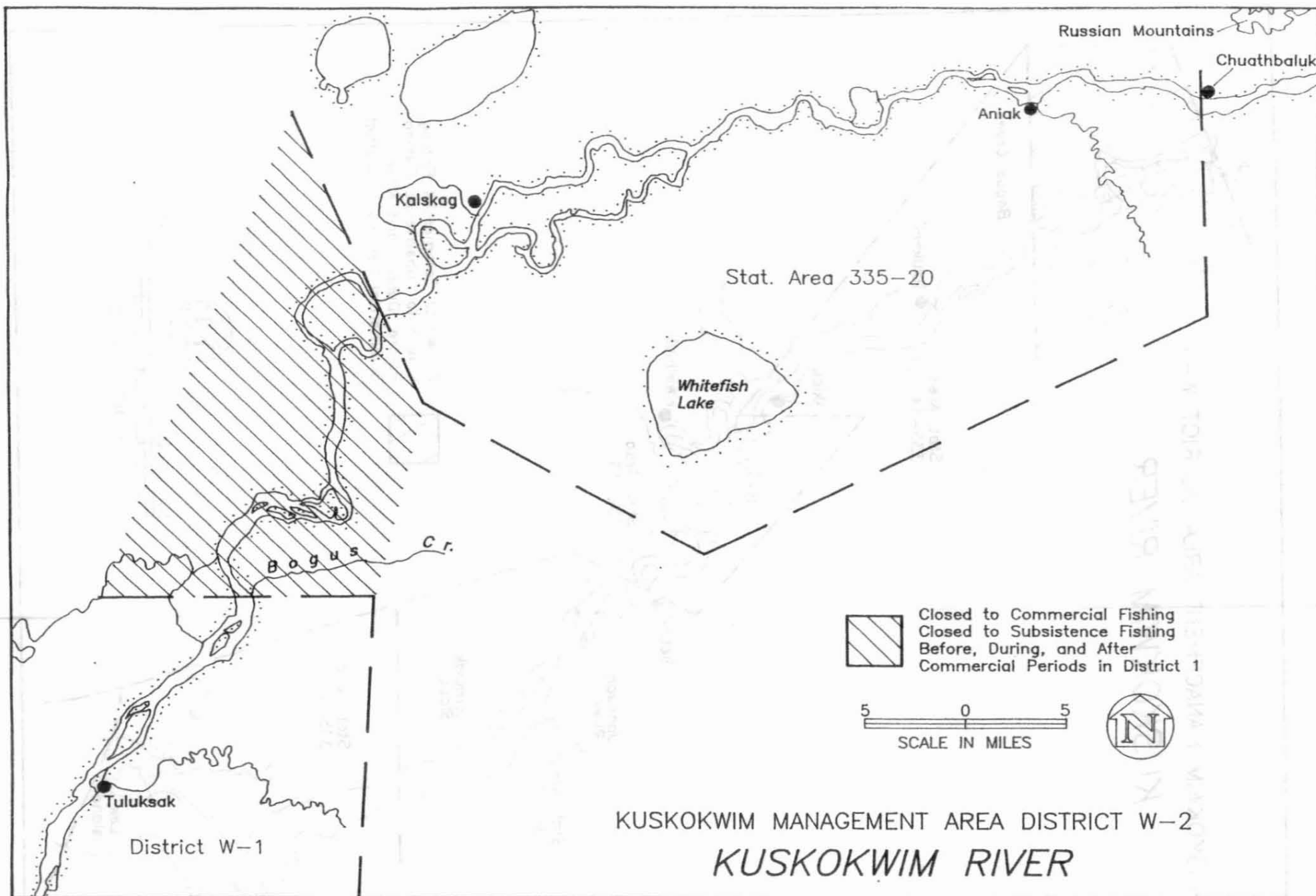


Figure 1. Kuskokwim Area map showing salmon management districts and escapement monitoring projects.

KUSKOKWIM MANAGEMENT AREA DISTRICT W-1

KUSKOKWIM RIVER





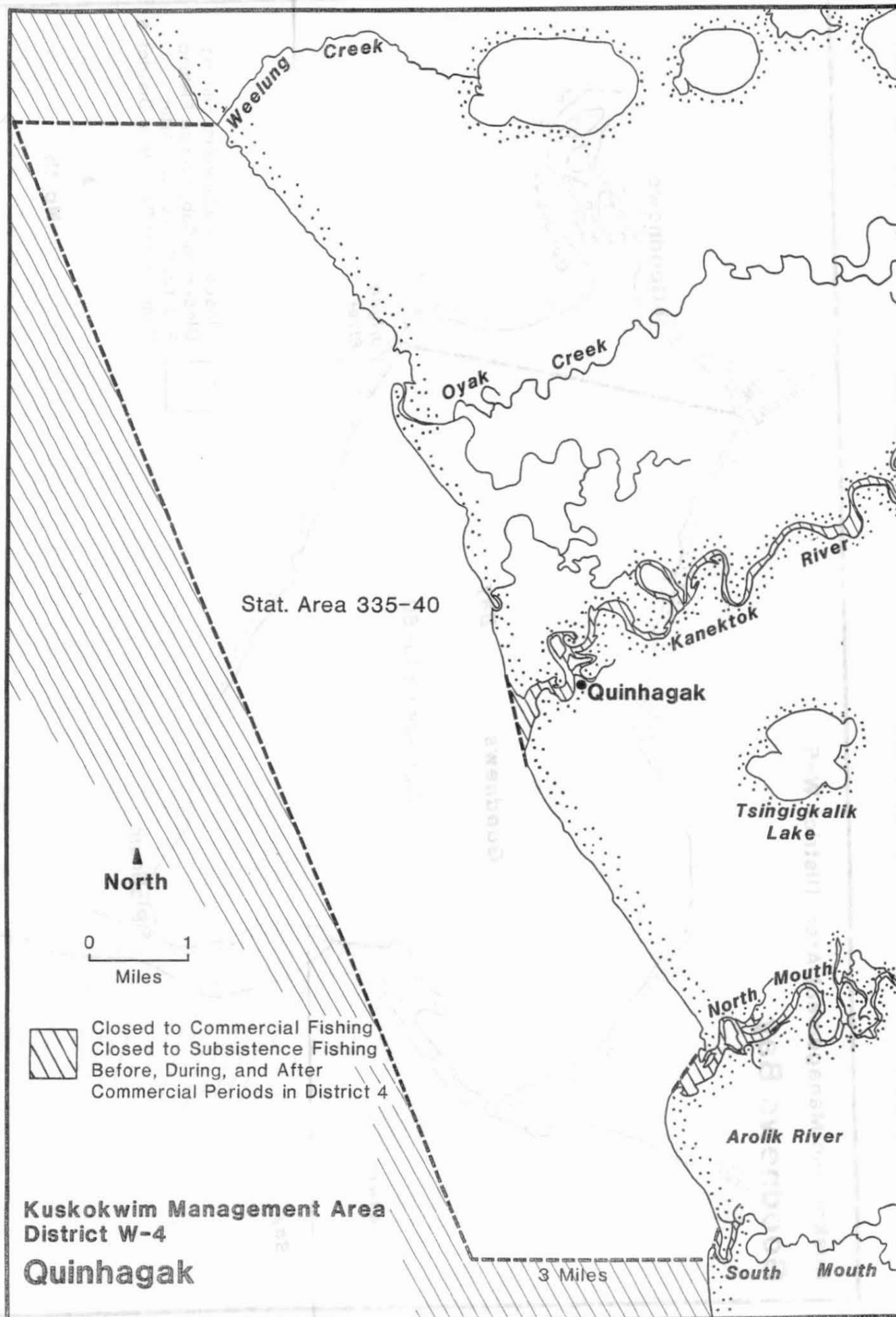


Figure 4 Kuskokwim Management Area, District W-4

Kuskokwim Management Area District W-5

Goodnews Bay

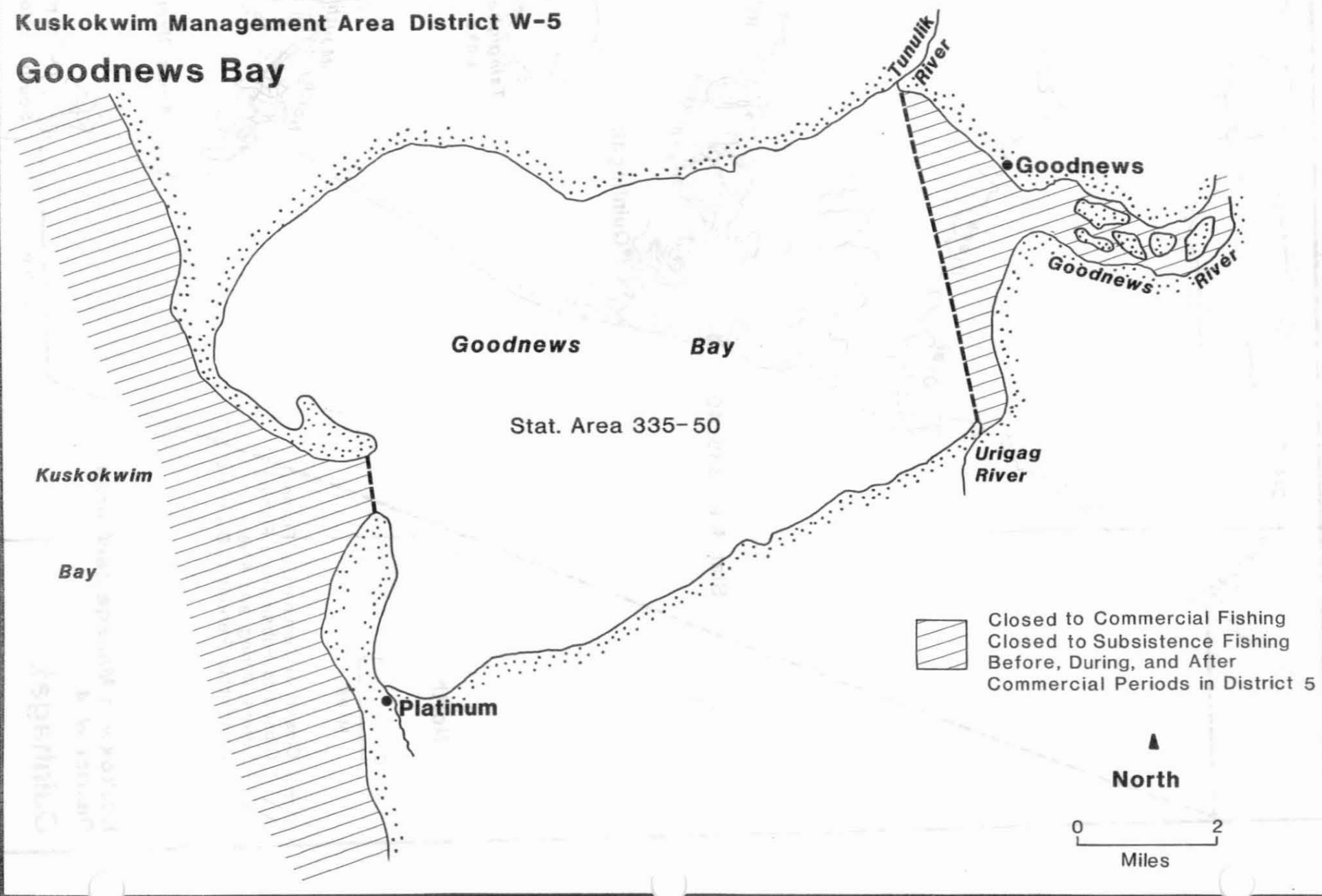


Figure 5. Kuskokwim Management Area, District W-5

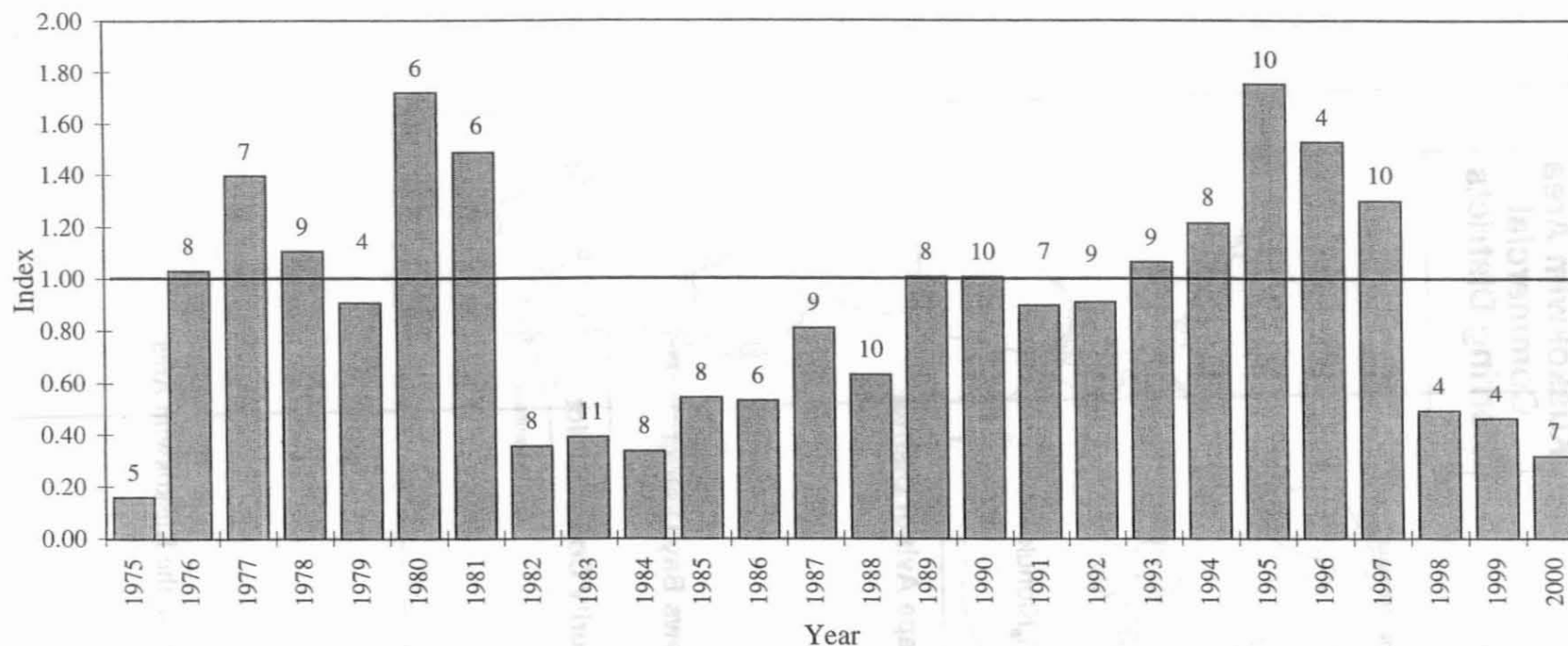


Figure 6. The Kuskokwim River chinook salmon escapement index represents the relative escapement of 13 possible index streams for which adequate data is available. Numbers on top of bars indicate the number of index streams represented. The index scale represents the escapement relative to the proportion of the BEG, if a BEG has been established, otherwise it represents the proportion of the median historical escapement. Index values greater than or equal to one mean that the BEG or historical median escapement was achieved in half or more of the streams. Index values less than one mean that the BEG or historical median escapement was not achieved in over half the streams.

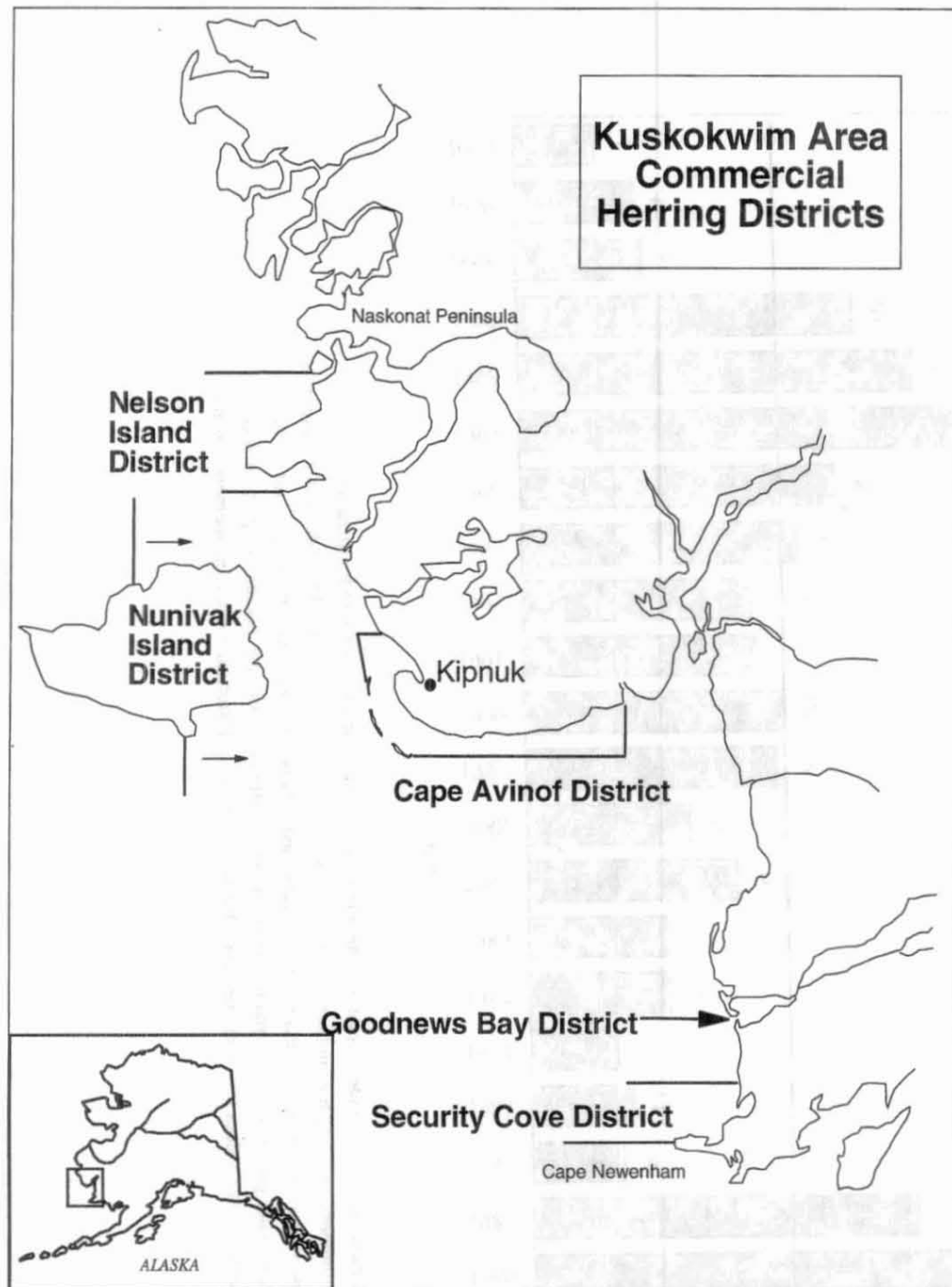


Figure 7. Commercial herring fishing districts in the Kuskokwim Area.

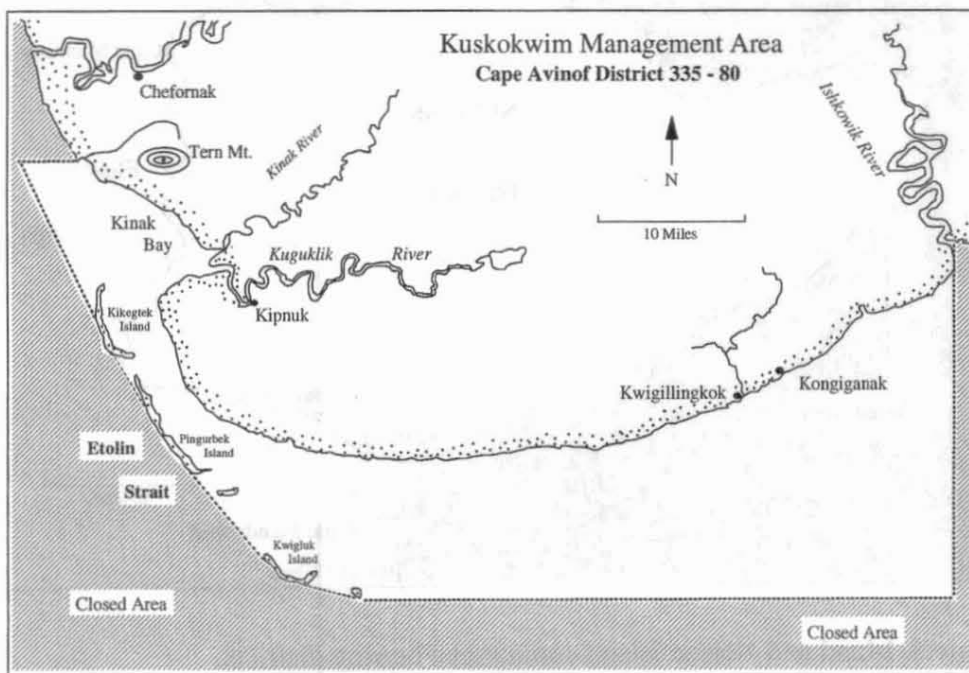


Figure 8. Security Cove, Goodnews Bay, and Cape Avinof commercial herring fishing districts.

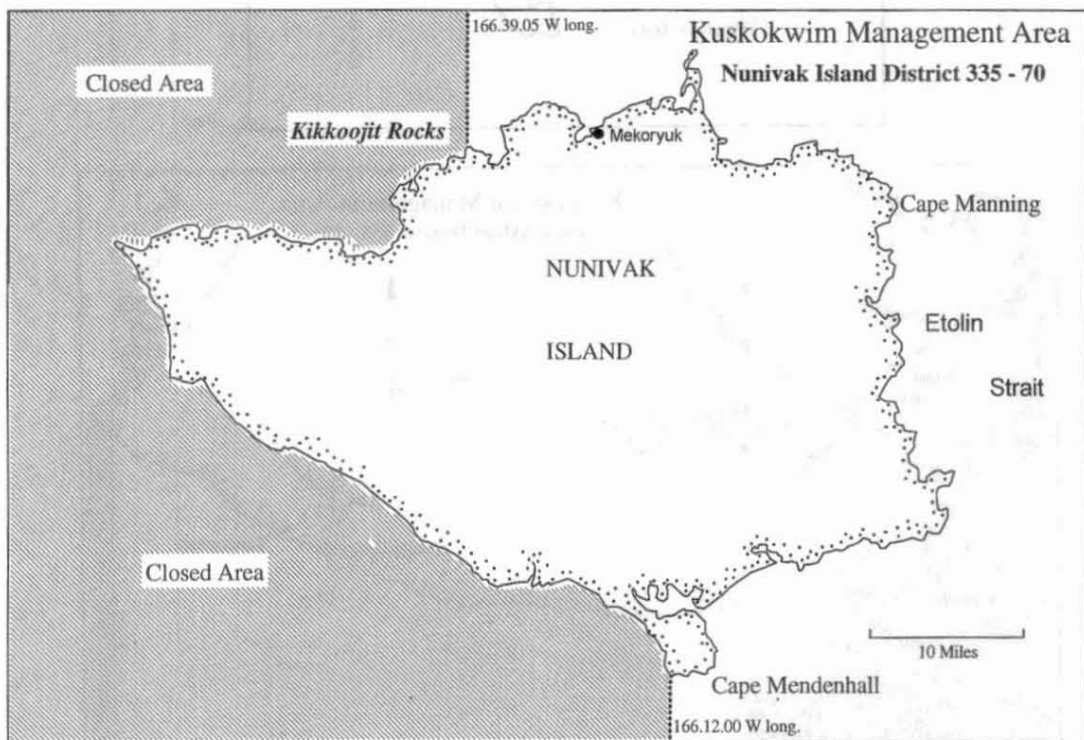
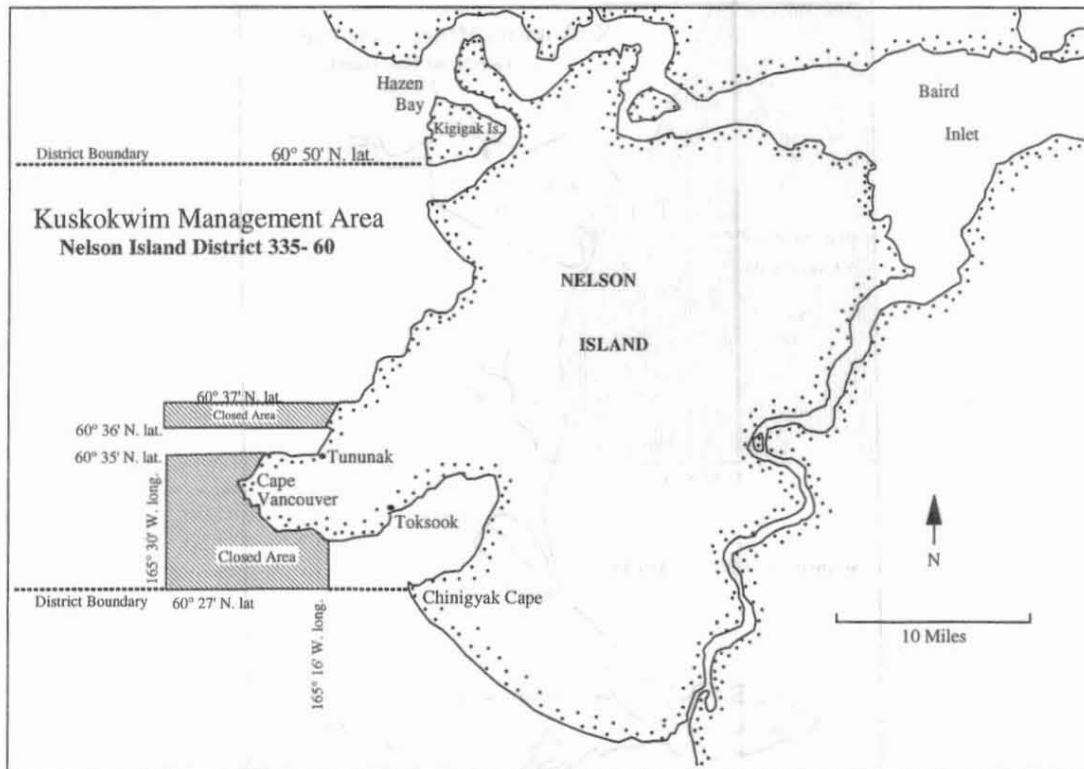


Figure 9. Nunivak Island and Nelson Island commercial herring districts.

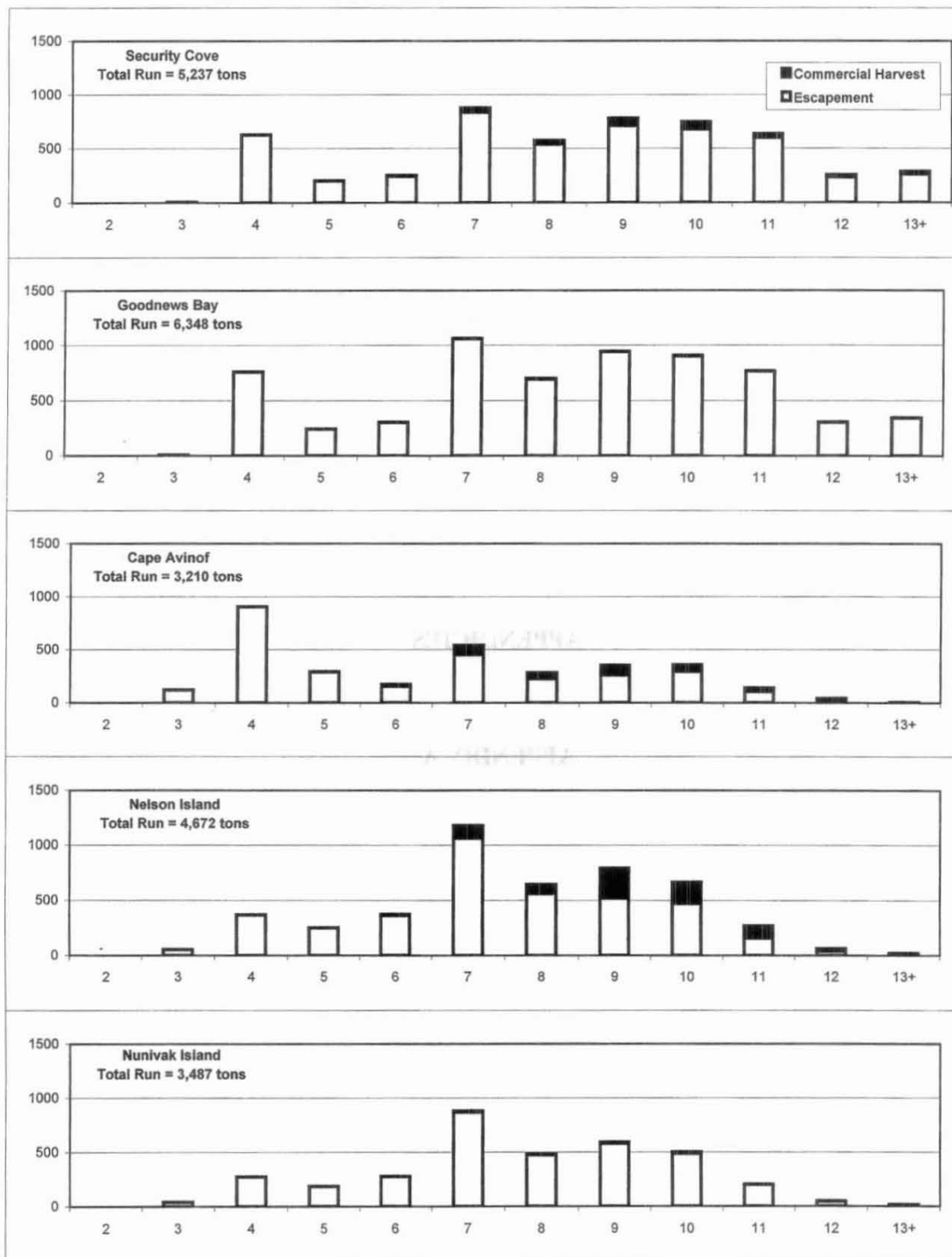


Figure 10. Age composition of Pacific herring in spawning populations and commercial harvest, Kuskokwim Area, Alaska, 2000.

APPENDICES

APPENDIX A

Appendix A.1. Fish species commonly found in the Kuskokwim Area.

Species Code	Genus and Species ^a	Common Name ^a
110	<i>Gadus macrocephalus</i>	Pacific Cod
113	<i>Eleginus gracilis</i>	Saffron Cod
129	<i>Platichthys stellatus</i>	Starry Flounder
122	<i>Pleuronectes glacialis</i>	Arctic Flounder
127	<i>Pleuronectes aspera</i>	Yellowfin Sole
128	<i>Pleuronectes vetulus</i>	English Sole
162	<i>Cottus cognatus</i>	Slimy Sculpin
166	<i>Oligocottus maculosus</i>	Tidepool Sculpin
192	<i>Hexagrammos stelleri</i>	Whitespotted Greenling
200	<i>Hippoglossus stenolepis</i>	Pacific Halibut
230	<i>Clupea pallasii</i>	Pacific Herring
410	<i>Oncorhynchus tshawytscha</i>	Chinook Salmon
420	<i>Oncorhynchus nerka</i>	Sockeye Salmon
430	<i>Oncorhynchus kisutch</i>	Coho Salmon
440	<i>Oncorhynchus gorbuscha</i>	Pink Salmon
450	<i>Oncorhynchus keta</i>	Chum Salmon
500	<i>Esox lucius</i>	Northern Pike
513	<i>Osmerus mordax</i>	Rainbow Smelt
514	<i>Hypomesus olidus</i>	Pond Smelt
516	<i>Mallotus villosus</i>	Capelin
520	<i>Salvelinus alpinus</i>	Arctic Char
532	<i>Salvelinus malma</i>	Dolly Varden
541	<i>Oncorhynchus mykiss</i>	Rainbow Trout
550	<i>Salvelinus namaycush</i>	Lake Trout
570	<i>Stenodus leucichthys</i>	Inconnu
588	<i>Coregonus nasus</i>	Broad Whitefish
589	<i>Coregonus pidschian</i>	Humpback Whitefish
583	<i>Coregonus sardinella</i>	Least Cisco
584	<i>Coregonus autumnalis</i>	Arctic Cisco
586	<i>Prosopium cylindraceum</i>	Round Whitefish
590	<i>Lota lota</i>	Burbot
600	<i>Lampetra tridentata</i>	Pacific Lamprey
601	<i>Lampetra japonica</i>	Arctic Lamprey
610	<i>Thymallus arcticus</i>	Arctic Grayling
630	<i>Dallia pectoralis</i>	Alaska Blackfish
640	<i>Catostomus catostomus</i>	Longnose Sucker
660	<i>Gasterosteus aculeatus</i>	Threespine Stickleback
661	<i>Pungitius pungitius</i>	Ninespine Stickleback
670	<i>Percopsis omiscomaycus</i>	Trout Perch
NA	<i>Megalocottus platycephalus</i>	Belligerent Sculpin
NA	<i>Myoxocephalus quadricornis</i>	Fourhorn Sculpin

a Based on American Fisheries Society Special Publication No. 20, Common and Scientific Names of Fishes from the United States and Canada (Fifth Edition). Committee and Names of Fishes, Bethesda, Maryland, 1991.

Appendix A.2. Historical events, which have potential or actual, influence on the commercial salmon fisheries of the Kuskokwim Area.

YEAR	EVENT ^a
1913	• Commercial sale of salmon export first documented in the Kuskokwim Area.
1954	• Commercial chinook salmon quota established.
1959	• First chinook landing since quota established.
1960	• Kanektok Counting Tower (1960-1962) • Quinhagak District (W-4) commercial salmon fishery established. • Kuskokwim Area divided into four subdistricts; Lower Kuskokwim River (Subdistrict 1), Middle Kuskokwim River (Subdistrict 2), Upper Kuskokwim River (Subdistrict 3), Quinhagak (Subdistrict 4). District boundaries are not well recorded; in the Aniak area some commonly used drift sites overlap between District 2 and 3 which confused catch reporting. • Kuskokwim River Drainage Surveys, 1960.
1961	• ADF&G Kuskokwim River tagging study.
1962	• ADF&G Kuskokwim River tagging study. • Boundary between Subdistricts 2 and 3 changed; the new location was not recorded but the most likely location was Kolmakof River. The reason for the change was to move the boundary to a point which was between commonly used gillnet locations and thereby avoid confusion in catch reporting. As a result, there were no landings in Subdistrict 3.
1963	• ADF&G Kuskokwim River tagging study. • Boundaries of subdistrict documented; Subdistrict 1 extended from Kuskokuak to Mishevik Slough, Subdistrict 2 was from Mishevik Slough to Kolmakof River, Subdistrict 3 was upstream of Kolmakof River.
1965	• Kwegooyuk test fishery (1965-1984; no records available for 1965).
1966	• ADF&G Kuskokwim River tagging study. • Subdistrict 3 was deleted from the regulations due to a lack of landings.
1968	• Goodnews Bay District (W-5) commercial salmon fishery established.
1969	• District 4 tagging study (1969-1970) on chinook and chum salmon. • Kogrukluk River (aka. Holitna River, Ignatti) tower/weir (1969-present).
1970	• Effect of explosive detonation in ice on northern pike.
1971	• Commercial fishing time in the Kuskokwim River reduced from two 24-hour periods per week to two 12-hour periods per week. • Chum fishery begins in the Kuskokwim River; season was from 25 June to 31 July, location limited to waters downstream of Napakiak, mesh size restricted to 6 in. or smaller. • Fishing periods established by Emergency Order in August. • Gillnet mesh size in Districts 4 and 5 restricted to 6 inch or smaller.
1974	• Commercial sale of salmon roe from subsistence caught fish (1974-1977)
1976	• Commercial fishing time in the Kuskokwim River was reduced from two 12 hour periods per week to two 6 hour periods per week. • Eek River reconnaissance survey. • Study on genetic variants in chum and chinook salmon.

-continued-

YEAR	EVENT ^a
1977	<ul style="list-style-type: none"> Fishing periods to be established by Emergency Order before 26 June and after 31 July. Limited entry permits issued. Subsistence fishing closed 24 hours before during and 6 hours after each commercial fishing period. Hoholitna River reconnaissance survey
1978	<ul style="list-style-type: none"> Kasigluk River reconnaissance survey. Kwethluk River sonar project.
1979	<ul style="list-style-type: none"> The portion of District 1 used during the chum salmon season was extended from Napakiak upstream to Bethel. Kasigluk River sonar project. High seas salmon fleet moved for west of 160° W. longitude to west of 180° W. longitude.
1980	<ul style="list-style-type: none"> Subsistence fishing closed 24 hours before, during and 6 hours after each commercial fishing period. Aniak River sonar project.
1981	<ul style="list-style-type: none"> Pilot test fish and FanScan projects at Bethel. Inventory of Kisaralik River and Lake. Goodnews River counting tower (1981-1990). Salmon River (Pitka Fork drainage) weir project (1981-1984). Species identification program results in better differentiation of sockeye and chum salmon.
1982	<ul style="list-style-type: none"> Kanektok River sonar project (1982-1986).
1983	<ul style="list-style-type: none"> Pilot test fish project at Bethel using drift gillnets. Provisional escapement goals established for many of the major spawning tributaries in the area. Management strategy shifts from guideline harvest based to obtaining escapement objective.
1984	<ul style="list-style-type: none"> Kwegooyuk test fishery replaced by the Bethel drift test fishery.
1985	<ul style="list-style-type: none"> Commercial fishing restricted to mesh sizes less than or equal to 6 inches. Chum season utilizes entire length of District 1.
1986	<ul style="list-style-type: none"> <i>Migratory timing of coho salmon in the Kuskokwim Area, 1979-1984.</i> Kuskokwim River salmon abundance estimate based on calibrated test fish CPUE. Downstream boundary of District 1 extended to a line from Apokak Slough to Popokamiut.
1987	<ul style="list-style-type: none"> Discontinued the directed commercial chinook salmon fishery in the Kuskokwim River. Sale of chinook salmon limited to 14,000 in the Kuskokwim River June commercial fishery. First fishing period restricted to that portion of District 1, which is downstream of Bethel, due to chinook conservation concerns. Subsistence fishing in all of District 2 and its tributary streams is closed before, during and after commercial periods. South peninsula sockeye and chum salmon tagging study.

-continued-

YEAR	EVENT ^a
1988	<ul style="list-style-type: none"> • Review of the estimation of Kuskokwim River annual salmon passage through expansion of the Bethel test fish CPUE. • Kuskokwim River sonar project (1988-1995). • Kuskokwim River subsistence test fisheries (1988-1990). • District 1 upstream boundary extended to Bogus Creek. • District 2 reduced in size; downstream boundary moved upstream to High Bluffs, the upstream boundary moved downstream to Chuathbaluk. • Portion of Kuskokwim River between Districts 1 and 2 closed to subsistence fishing when District 1 subsistence fishing is closed. • Reorganization of District 1 Statistical Areas. • District 4 Salmon Management Plan adopted. • Establishment of the Kuskokwim River Salmon Management Working Group (1988-present). • Eek Test Fishery (1988-1990, 1992-1995).
1989	<ul style="list-style-type: none"> • USFWS conducted genetic sampling throughout the Kuskokwim Area. • USFWS conducted chinook tagging study in the lower Kuskokwim River. • Record low temperatures recorded in interior Alaska coupled with shallow snow pack threaten survival of salmon eggs/fry from 1988 spawning.
1990	<ul style="list-style-type: none"> • ADF&G genetic sampling (1990 - 1996). • Reorganization of District 1 statistical areas. • Upstream boundary of District 1 moved downstream from Bogus Creek to Big (Nelson) Island. • Downstream boundary of District 2 moved upstream to second slough below Kalskag. • District 4 northern boundary is extended north to Weelung Creek.
1991	<ul style="list-style-type: none"> • USFWS operates Tuluksak River weir (1991-1994). • Weir replaces counting tower on Goodnews River (1991-present).
1992	<ul style="list-style-type: none"> • Aniak and Chuathbaluk test fisheries (1992-1995). • Eek test fishery is re-established for the coho season. • USFWS operates Kwethluk River weir (1992) • Ban on high-seas drift gillnet fishing imposed. • Unusual proportion of returning 5-year-old chum salmon had reduced growth between the second third annuli. • Failure of age 4 chum salmon in the Kuskokwim River; Aniak drainage especially hard hit; attributed to cold winter of 1988-89.
1993	<ul style="list-style-type: none"> • Failure of age 4 and 5 chum salmon in the Kuskokwim River, Yukon River, and the Norton Sound/Kotzebue Area; cause unknown; especially hard hit were the Aniak drainage and the Yukon fall chum; commercial fishing severely restricted, chum sport fishery was closed, and the subsistence salmon fishery was restricted and closed for a period of time (first time ever).
1994	<ul style="list-style-type: none"> • Working Group commissioned and Dr. Mundy started "Recommendations for Strengthening the Cooperative Management Process of the Kuskokwim River Salmon Management Working Group". • Upstream boundary of District 1 moved upstream to Bogus Creek.
1995	<ul style="list-style-type: none"> • BSFA operates a chum salmon radio telemetry project on the Kuskokwim River. • Takotna Community School and ADF&G/CF operate a salmon counting tower on the Takotna River (1995-1998). • AVCP and BSFA operate the Lower Kuskokwim test fishery in cooperation with ADF&G; the project is a modification of the Eek test fishery.

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YEAR	EVENT ^a
1996	<ul style="list-style-type: none"> • ADF&G genetic sampling for late spawning chum salmon and one mixed stock sample from District 1. • Near record low water levels during June and early August coupled with record high water temperatures. • Irregular fishing schedule in District 1 during June and July due to limited market interest for chum salmon. • Record early coho run coupled with record high harvest and escapement at Kogruklu River. • AVCP and ADF&G/CF operate a salmon counting tower on the Kwethluk River (1996-1999). • KNA and ADF&G/CF operate a salmon weir on the George River (1996-present). • Aniak River sonar is relocated to allow for full channel ensonification and configurable sonar technology is employed (1996-present). • Native Village of Kwinhagak (NVK) begins development of a salmon counting tower on the Kanektok River.
1997	<ul style="list-style-type: none"> • Kuskokwim River declared an economic disaster area due to very low chum and coho salmon returns, harvests and exvessel prices. Northern boundary of District 4 moved 3 miles south from July 14 to July 28. Record low chum salmon escapement at Kogruklu River weir. • Second summer of record low water levels in the Kuskokwim River basin during the summer and fall coupled with record high water temperatures. • Anomalous Bering Sea conditions: warm water, odd plankton blooms, sea bird die offs, etc. • Aniak chum salmon return vastly exceeded expectations based on 1992-1993 spawning abundance estimates. • Due to an extremely low return of chum salmon, ADF&G, AVCP, KNA, KRSMWG, ONC, TCC and McGrath Native Village Council issue a joint appeal for subsistence users to conserve chum salmon. Record low subsistence harvest of chum salmon in the Kuskokwim Area. • Aniak processor does not operate due to depressed salmon market (1997-present). • Sale of salmon roe is prohibited in Districts 1 and 2 (effective beginning December 1997). • Middle Fork Goodnews River weir converted from fixed-panel to a resistance board "floating weir" and operated through majority of coho run for first time (1997-present). • NVK and ADF&G/CF operate a salmon counting tower on the Kanektok River (1997-1998).
1998	<ul style="list-style-type: none"> • Kuskokwim River declared an economic disaster area for second straight year due to low chum and coho salmon returns, harvests and exvessel prices. • KNA and ADF&G/CF operate a salmon weir on the Tatlawiksuk River (1998-present). • Second year of anomalous Bering Sea conditions: warm water, odd plankton blooms, sea bird die offs, etc. • High water levels severely restrict operational period of many Kuskokwim Area escapement projects. • Record low average water temperature measured at the Bethel test fish site.
1999	<ul style="list-style-type: none"> • Kuskokwim River experiences extremely low chinook, chum and coho salmon returns, harvests and exvessel prices for third consecutive year. All species have very late run timing. Kuskokwim Bay coho returns and harvests extremely low. • Federal government assumes control of subsistence fishery management in federal waters on October 1. • KNA-operated salmon weirs on the Tatlawiksuk and George Rivers converted to resistance board (floating) weirs and operations extended through coho run. • Kuskokwim River sonar project begins redevelopment using split-beam sonar and is relocated to a new site one mile above upstream end of Church Slough.

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YEAR	EVENT ^a
2000	<ul style="list-style-type: none"> • Kuskokwim River declared an economic disaster area due to extremely low chum salmon return, harvest and exvessel price. Chinook salmon returns are very low for second consecutive year. Many subsistence fishers report that they were unable to meet their chinook and chum salmon harvest goals. • Due to an extremely low return of chinook salmon, ADF&G, AVCP, KNA, KRSMWG, Kwethluk IRA, TCC, McGrath Native Village Council and USF&WS issue a joint appeal for subsistence users to conserve chinook salmon. • ADF&G and Federal Office of Subsistence Management (FOSM) restrict subsistence chinook salmon fishery. • Takotna Community Schools and ADF&G/CF operate a resistance board weir on the Takotna River • Kwethluk IRA and USF&WS operate a resistance board weir on the Kwethluk River • District W-1 divided into Subdistricts W-1A (above Bethel) and W-1B (below Bethel) and fishers are required to register to fish in only one subdistrict. Due to limited processing capacity, only one subdistrict is opened at a time to reduce harvest. • Commercial fishers required to identify vessels with either ADFG or CFEC permit number. • ADF&G Sport Fish Division creates Lower Yukon-Kuskokwim Management Area and stations Area Management Biologist in Bethel. • Line attached to a pole (rod and reel) added to legal gear for subsistence fishing in AVCP area.

^a For additional information on specific topics refer to the Region III Report Catalog or historical Area Management Reports for the Kuskokwim Area.

Appendix A.3. Kuskokwim Area escapement index objectives for chinook, sockeye, coho and chum salmon.

		<u>Escapement Objectives^a</u>			
		Chinook	Sockeye	Coho	Chum
<u>KUSKOKWIM RIVER:</u>					
1.	Kwethluk River				
a.	3-step Mt. to Canyon Cr.	1.0	-	-	7.0
b.	Canyon Creek	0.2	-	-	-
2.	Kisaralik River				
a.	Airstrip to Kisaralik L.	1.0	-	-	8.0
b.	Kasigluk R. (upper to lower)	0.1	-	-	4.0
3.	Tuluksak R. (Fog R. to Bear Cr.)	0.4	-	-	5.0
4.	Aniak River				
a.	Buckstock R. to Aniak L.	1.5	-	-	10.0
b.	Salmon River	0.6	-	-	3.0
c.	Aniak Sonar Project ^b	-	-	-	250.0
5.	Holitna River				
a.	Nogamut to Kashegelo	2.0	-	-	12.0
b.	Kogrukluk Weir ^c	10.0	-	25.0	30.0
6.	Salmon River (Pitka Fork)	1.3	-	-	-
<u>KUSKOKWIM BAY:</u>					
1.	Kanektok River to Kagati Lake	5.0	15.0	25.0	30.5
2.	Goodnews River System				
a.	Main Fork and lakes	1.6	15.0	15.0	17.0
b.	Middle Fork and lakes	0.8	5.0	2.0	4.0
c.	Middle Fork Weir ^c	3.5	25.0	-	15.0

- a Escapement objectives in thousands of fish are preliminary and are subject to change as additional data becomes available. Unless otherwise indicated, escapement objectives are based on aerial index counts which do not represent total escapement, but do reflect annual spawner abundance trends when made using standard survey methods under acceptable survey conditions.
- b Sonar total escapement estimates.
- c Weir total escapement estimates.

Appendix A.4. Kuskokwim Area commercial, subsistence and personal use salmon catches, 1913-2000.

Year	Commercial Harvest						Subsistence Harvest				Total Harvest
	Chinook	Sockeye	Chum	Pink	Coho	Subtotal	Chinook	Other ^c	Coho ^b	Subtotal	
1913	7,800					7,800					7,800
1914		2,667				2,667					2,667
1915											0
1916	949					949					949
1917	7,878					7,878					7,878
1918	3,055					3,055					3,055
1919	4,836					4,836					4,836
1920	34,853					34,853					34,853
1921	9,854					9,854					9,854
1922	8,944	6,120				15,064				180,000	195,064
1923	7,254					7,254					7,254
1924	19,253	900		7,167	7,167	34,487	17,700	203,148		220,848	255,335
1925	1,644	5,800				7,444	10,800	230,850		241,650	249,094
1926										738,576	738,576
1927										286,254	286,254
1928										481,090	481,090
1929										560,196	560,196
1930	7,626	2,448				10,074				538,650	548,724
1931	8,541					8,541				389,367	397,908
1932	9,339					9,339				746,415	755,754
1933							6,290	443,998		450,288	450,288
1934							20,800	597,132		617,932	617,932
1935	6,448				8,296	14,744	22,930	554,040		576,970	591,714
1936	624					624	33,500	549,423		582,923	583,547
1937	480					480		537,111		537,111	537,591
1938	624				828	1,452	10,153	400,242		410,395	411,847
1939	134					134	14,000	125,425		139,425	139,559
1940	247				500	747	8,000	415,523		423,523	424,270
1941	187				674	861	8,000	415,523		423,523	424,384
1942							6,400	325,339		331,739	331,739

- continued -

Year	Commercial Harvest					Subsistence Harvest				Total	
	Chinook	Sockeye	Chum	Pink	Coho	Subtotal	Chinook	Other ^c	Coho ^b	Subtotal	Harvest
1943							6,400	325,339		331,739	331,739
1944											
1945											0
1946	2,288				674	2,962					2,962
1947	5,356					5,356					5,356
1948											0
1949											0
1950											0
1951	4,210					4,210					4,210
1952											0
1953											0
1954	57					57					57
1955											0
1956											0
1957											0
1958											0
1959	3,760					3,760					3,760
1960	5,969	5,649	0	0	5,498	17,116	18,887	301,753		320,640	337,756
1961	23,246	2,308	18,864	90	5,090	49,598	28,934	179,529		208,463	258,061
1962	20,867	10,313	45,707	4,340	12,432	93,659	13,582	175,304	161,849	350,735	444,394
1963	18,571	0	0	0	15,660	34,231	34,482	170,829	137,649	342,960	377,191
1964	21,230	13,422	707	939	28,992	65,290	29,017	219,208	190,191	438,416	503,706
1965	24,965	1,886	4,242	0	12,191	43,284	24,697	250,878		275,575	318,859
1966	25,823	1,030	2,610	268	22,985	52,716	49,325	175,735		225,060	277,776
1967	29,986	652	8,235	0	58,239	97,112	61,262	214,468		275,730	372,842
1968	43,157	5,884	19,684	75,818	154,275	298,818	35,698	278,008		313,706	612,524
1969	64,777	10,362	50,377	1,251	110,473	237,240	40,617	204,105		244,722	481,962
1970	64,722	12,654	60,566	27,422	62,245	227,609	69,612	246,810	11,868	328,290	555,899
1971	44,936	6,054	99,423	13	10,006	160,432	43,013	116,391	6,899	166,303	326,735
1972	55,598	4,312	97,197	1,952	23,880	182,939	38,176	120,316	1,325	159,817	342,756
1973	51,374	5,224	184,207	634	152,408	393,847	38,451	179,259	23,746	241,456	635,303
1974	30,670	29,003	196,127	60,099	179,579	495,478	26,665	277,170	32,780	336,615	832,093

- continued -

Year	Commercial Harvest						Subsistence Harvest					Total
	Chinook	Sockeye	Chum	Pink	Coho	Subtotal	Chinook	Other ^c	Coho ^b	Subtotal	Harvest	
1975	28,219	17,686	225,308	910	112,751	384,874	47,569	176,389		223,958	608,832	
1976	49,262	14,636	231,877	39,998	112,130	447,903	58,055	223,792	4,312	286,159	734,062	
1977	58,256	18,621	298,959	434	263,727	639,997	58,158	203,397	12,193	273,748	913,745	
1978	63,194	13,734	282,044	61,968	247,271	668,211	38,145	125,052	12,437	175,634	843,845	
1979	53,314	39,463	297,167	574	308,683	699,201	57,053	163,451		220,504	919,705	
1980	48,599	42,213	561,483	30,306	327,908	1,010,509	62,047	168,987	47,335	278,369	1,288,878	
1981	79,377	105,940	485,653	463	278,541	949,974	64,274	163,554	28,301	256,129	1,206,103	
1982	79,816	97,716	326,481	18,259	567,452	1,089,724	61,141	195,691	45,181	302,013	1,391,737	
1983	93,676	90,834	306,554	379	248,389	739,832	51,020	149,172	2,834	203,026	942,858	
1984	74,016	81,304	488,480	23,902	826,774	1,494,476	60,668	144,651	15,016	220,335	1,714,811	
							Chinook	Sockeye	Chum	Pink	Coho	
1985	74,083	121,221	224,680	111	382,096	802,191	45,720	33,632	95,999	1,062	24,524	1,003,128
1986	44,972	142,029	349,268	16,569	736,910	1,289,748	54,256	20,239	142,930 ^c		29,742	1,536,915
1987	65,558	170,849	603,274	163	478,594	1,318,438	71,804	25,180	70,709	291	18,085	1,504,507
1988 ^{dc}	74,563	149,949	1,443,953	37,592	623,733	2,329,790	75,107	33,102	153,980		43,866	2,635,845
1989 ^d	66,914	82,365	801,355	819	554,411	1,505,864	85,322	37,088	145,106		57,847	1,831,227
1990	84,451	203,919	521,023	16,050	443,783	1,269,226	92,678	39,662	131,469		50,713	1,583,748
1991	48,170	202,441	502,187	522	556,818	1,310,138	90,224	56,404	96,308		55,581	1,608,655
1992	67,597	192,341	436,506	85,978	772,449	1,554,871	68,665	34,159	99,576		44,496	1,801,767
1993	26,636	167,235	94,937	71	686,570	975,449	91,721	51,363	61,726		35,295	1,215,554
1994	27,345	191,169	360,893	84,870	856,100	1,520,377	98,378	39,279	76,951		36,504	1,771,489
1995	72,352	198,045	707,212	318	555,539	1,533,466	100,159	28,622	68,942		39,165	1,770,354
1996	22,959	122,260	301,975	1,663	1,099,865	1,548,722	81,598	35,036	90,238		34,698	1,790,292
1997	47,990	123,002	67,200	7	166,648	404,847	85,506	41,270	40,976		30,714	603,313
1998	44,402	130,074	268,199	2,720	312,517	757,912	86,115	37,578	67,665		27,240	976,510
1999	25,019	81,201	72,659	2	32,251	211,132	77,659	49,388	47,612		27,754	413,545
2000	26,115	109,939	49,574	17	307,439	493,084	68,841	44,832	55,371		35,670	697,798
10-Year												
Average	46,692	161,169	333,279	38,256 ^f	548,254	1,108,614	87,270	41,276	78,146		38,216	1,353,523
1990-99												

^a Primarily chum and coho salmon.^b Reported subsistence coho salmon harvest only. Coho salmon subsistence harvest is poorly documented with no Kuskokwim River estimates attempted prior to 1988.^c Includes sockeye, pink and chum salmon.^d The personal use catch is included with the subsistence catch.^e Beginning in 1988, estimates are based on a new formula therefore data since 1988 is not comparable with previous years.^f Even years only.

Appendix A.5. Commercial Fishing Effort in Permit-Hour^a for the Kuskokwim Area, 1960-2000.

Year	District W-1	District W-2	District W-3	District W-4	District W-5	Total
1960	5,136	960	648	4,368	Closed	11,112
1961	16,200	1,512	1,512	4,992	Closed	24,216
1962	14,274		0	8,434	Closed	22,708
1963	5,712	1,722	0	5,520	Closed	12,954
1964	6,468	1,140	0		Closed	7,608
1965	13,500	546	0	3,696	Closed	17,742
1966	18,270		Closed		Closed	18,270
1967	88,248	1,932		3,954	Closed	94,134
1968	77,466	720		7,986	4,704	90,876
1969	67,140	1,488		29,952	14,055	112,635
1970	56,646	3,414		22,080	9,756	91,896
1971	18,060	1,842		24,987	7,476	52,365
1972	47,802	1,722		7,060	1,452	58,036
1973	77,478	3,072		18,372	2,928	101,850
1974	124,569	4,950		18,984	8,148	156,651
1975	181,786	3,648		12,312	5,400	203,146
1976	82,788	3,894		14,784	4,848	106,314
1977	73,944	3,426		17,592	3,780	98,742
1978	71,856	498		14,952	3,672	90,978
1979	49,608	984		27,096	8,220	85,908
1980	35,370	714		21,636	9,504	67,224
1981	45,096	1,248		25,656	11,256	83,256
1982	46,200	1,128		22,632	14,556	84,516
1983	45,102	708		20,478	9,456	75,744
1984	62,643	1,050		31,488	14,004	109,185
1985	37,452	462		22,260	8,544	68,718
1986	46,944	606		25,740	10,572	83,862
1987	60,525	576		21,222	10,332	92,655
1988	81,724	912		27,276	13,764	123,676
1989	66,990	846		25,992	12,552	106,380
1990	51,236	1,051		44,520	10,548	107,355
1991	64,806	1,548		29,160	11,532	107,046
1992	54,488	1,164		35,280	15,180	106,112
1993	39,210	774		36,000	13,116	89,100
1994	53,808	758		26,580	16,188	97,334
1995	42,784	602		34,680	14,844	92,910
1996	37,015	132		18,880	6,518	62,545
1997	13,662	30		28,848	5,832	48,372
1998	28,212	18		23,712	7,896	59,838
1999	4,788	0		16,488	5,424	26,700
2000	13,936	36		21,852	5,808	41,632
Ten Year						
Average	39,001	608		29,415	10,708	79,731
(1990-1999)						

^a Number of permits that made deliveries times the number of hours in the period.

Appendix A.6. Estimated exvessel value of the Kuskokwim Area commercial salmon fishery, 1964-2000.

<u>Year</u>	<u>Gross Value (\$ of Catch to Fishermen</u>	<u>Permits Fished^a</u>	<u>Average Income</u>
1964	83,030		
1965	90,950		
1966	87,466		
1967	138,647		
1968	290,370		
1969	297,233		
1970	362,470		
1971	371,220		
1972	360,727		
1973	827,735		
1974	1,056,042		
1975	899,178		
1976	1,380,229		
1977	3,891,950		
1978	2,337,470		
1979	3,678,000		
1980	2,725,134		
1981	3,766,525		
1982	4,213,954		
1983	2,670,400		
1984	5,809,000	774	7,505
1985	3,248,089	781	4,159
1986	4,746,089	789	6,015
1987	6,392,822	798	8,011
1988	12,514,489	811	15,431
1989	5,171,860	824	6,277
1990	4,894,580	824	5,940
1991	3,971,423	820	4,843
1992	5,295,912	814	6,506
1993	3,962,890	807	4,911
1994	5,201,611	797	6,526
1995	4,209,752	829	5,078
1996	2,900,603	713	4,068
1997	1,058,808	702	1,508
1998	1,634,495	707	2,312
1999	551,725	604	913
2000	1,197,149	623	1,922
<hr/>			
Ten year			
Average	3,368,180	762	4,261
(1990-1999)			

a Number of permits that made at least one delivery

Appendix A.7. Historical salmon escapement data from selected Kuskokwim Area projects, 1976-2000

Year	Operating Period	Chinook	Sockeye	Chum	Pink ^a	Coho
Kogruklu River Weir						
BEG		10,000		30,000		25,000
1976	06/29 to 07/31	5,579	2,326	8,117	0	^b
1977	07/14 to 07/27	1,945 ^b	1,637 ^b	19,444	2	^b
1978	06/28 to 07/31	13,667	1,670	48,125	2	^b
1979	07/01 to 07/24	11,338	2,628	18,599	1	^b
1980	07/01 to 07/11	6,572 ^b	3,200 ^b	41,777	1	^b
1981	06/27 to 10/05	16,655	18,066	57,365	6	11,455
1982	07/09 to 09/14	10,993 ^b	17,297 ^b	64,077	19	37,796
1983	06/23 to 09/27	2,992 ^f	1,176 ^f	9,407 ^f	0	8,538
1984	06/19 to 09/15	4,928	4,133	41,484	0	27,595
1985	07/06 to 09/24	4,619	4,359	15,005	0	16,441
1986	06/29 to 09/07	5,038 ^b	4,244 ^b	14,693	0	22,506
1987	07/15 to 09/24	4,063 ^f	973 ^f	17,422 ^f	0	22,821
1988	07/05 to 09/17	8,505	4,397	39,540	0	13,512
1989	07/07 to 08/24	11,940 ^f	5,811 ^f	39,548	0	1272 ^b
1990	06/28 to 09/07	10,218	8,406	26,765	1	6,132 ^b
1991	07/04 to 09/15	7,850	16,455	24,188	4	9,933
1992	07/01 to 08/21	6,755	7,540	34,105	11	26,057 ^b
1993	07/02 to 09/06	12,332	29,358	31,899	0	20,517 ^b
1994	07/02 to 09/14	15,227	14,192 ^f	46,192 ^f	23	34,695
1995	07/02 to 09/06	20,630	10,996	31,265	2	27,861
1996	06/29 to 09/15	14,199	15,385	48,494	6	50,555
1997	06/28 to 09/21	13,286	13,078	7,937	0	12,237
1998	07/18 to 09/19	11,869 ^f	16,773 ^f	36,424 ^f	1	24,344
1999	07/01 to 09/20	5,570	5,864	13,810	0	12,609 ^f
2000	07/05 to 09/18	3,310	2,867	11,491	2	33,135
Aniak River Sonar						
BEG				250,000 ^c		
<i>Non user-configurable, one-bank expanded estimates 1980 - 1995</i>						
1980	06/22 to 07/30	56,469		1,169,470		
	08/16 to 09/12					81,556
1981	06/16 to 08/06	42,060		589,286		
1982	06/21 to 08/01	33,864		442,461		
1983	06/18 to 07/28	4,911		129,367		
1984	06/16 to 07/30			266,976		
1985	06/22 to 07/28			253,051		
1986	06/26 to 07/24			209,080		
1987	06/22 to 07/31			193,013		
1988	06/22 to 07/31			401,511		
1989	06/21 to 07/24			243,922		
1990	06/23 to 08/06			232,260		
1991	06/29 to 07/29			314,166		
1992	06/22 to 07/29			84,269		
1993	06/24 to 07/28			13,870		
1994	06/28 to 07/28			388,163		
1995	06/23 to 07/23			^d		
<i>User-configurable, two-bank estimates, 1996-1999</i>						
BEG				250,000 ^c		
1996	06/21 to 07/28			302,106		
1997	06/16 to 08/03			262,522		
1998	06/24 to 07/31			279,430		
1999	07/01 to 08/03			177,771		
2000	6/25 to 7/31			144,157		

- continued -

Appendix A.7. (page 2 of 3)

Year	Operating Period	Chinook	Sockeye	Chum	Pink	Coho
<u>Kwethluk River</u>						
<i>Weir</i>						
1992	06/18 to 09/12	9,675	1,316	30,596	45,952	45,605
<i>Tower</i>						
1996	06/22 to 07/27	7,415	1,801 ^b	26,049	2,899 ^b	180 ^b
1997	06/22 to 08/12	10,395	1,374	10,659	1,009 ^b	1,110 ^b
1998	07/24 to 08/18	120 ^b	120 ^b	720 ^b	4,398 ^b	2,367 ^b
1999	07/15 to 08/18	^b	^b	^b	^b	^b
<i>Weir Reinstalled</i>						
2000	6/15 to 9/15	3,547	358	12,382	1,407	25,610
<u>Tuluksak River Weir</u>						
1991	06/12 to 09/18	697	34	7,675	391	4,651
1992	06/24 to 09/10	1,083	129	11,183	2,458	7,501
1993	06/17 to 09/10	2,218	88	13,804	210	8,328
1994	06/29 to 09/11	2,922	94	15,707	3,450	8,213
<u>George River Weir</u>						
1996	06/21 to 07/26	7,487	98	17,570	644 ^b	^b
1997	06/09 to 09/15	7,820	445	5,941	17	8,937
1998	06/22 to 07/07	^b	^b	^b	^b	^b
1999	07/14 to 09/25	3,548	39	11,682	97	8,930
2000	06/17 to 09/16	2,959	23	3,488	61	11,256
<u>Takotna River</u>						
<i>Tower</i>						
1995	07/07 to 07/31	^b	0	1,685 ^b	0	0 ^b
1996	06/15 to 07/26	401	0	2,794	0	0 ^b
1997	06/15 to 07/26	1,176	0	1,794		
1998	06/20 to 07/07	^b	^b	^b	^b	^b
1999	Not Operational					
<i>Weir</i>						
2000	06/24 to 09/20	345	4	1,254	0	3,957
<u>Tatlawiksuk River Weir</u>						
1998	06/18 to 07/07	^b	^b	^b	^b	^b
1999	06/15 to 09/20	1,494	5	9,656	1	3,464
2000	06/15 to 08/13	810	0	6,965	0	24,000 ^f

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Appendix A.7. (page 3 of 3)

Year	Operating Period	Chinook	Sockeye	Chum	Pink ^a	Coho
Middle Fork Goodnews River						
BEG		3,500	25,000	15,000		
<i>Counting Tower, 1981 - 1991</i>						
1981	06/13 to 08/15	3,688	49,108	21,827	1,327 ^b	356 ^b
1982	06/23 to 08/03	1,395	56,255	6,767	13,855 ^b	91 ^b
1983	06/11 to 07/28	6,022	25,813	15,548	34 ^b	0 ^b
1984	06/15 to 07/31	3,260	32,053	19,003	13,744 ^b	249 ^b
1985	06/27 to 07/31	2,831	24,131	10,367	144 ^b	282 ^b
1986	06/16 to 07/24	2,092	51,069	14,764	8,133 ^b	163 ^b
1987	06/22 to 07/30	2,272	28,871	17,517	62 ^b	62 ^b
1988	06/23 to 07/30	2,712	15,799	20,799	6,781 ^b	6 ^b
1989	06/29 to 07/31	1,915	21,186	10,380	24b ^b	1,212 ^b
1990	06/19 to 07/24	3,636	31,679	6,410	3,378 ^b	0 ^b
<i>Weir, 1991 - 2000</i>						
1991	06/29 to 08/24	1,952	47,397	27,525	1,694 ^b	1,978 ^b
1992	06/29 to 08/25	1,903	27,268	22,023	23,030 ^b	150 ^b
1993	06/22 to 08/18	2,317	26,044	14,472	253 ^b	1,374 ^b
1994	06/23 to 08/08	3,856	55,751	34,849	38,705 ^b	309 ^b
1995	06/19 to 08/28	4,836	39,009	33,699	330 ^b	5,415 ^b
1996	06/19 to 08/23	2,930	58,264	40,450	14,509 ^b	9,699 ^b
1997	06/11 to 09/17	2,937	35,530	17,296	940	9,619
1998	07/04 to 09/13	4,584	47,951	28,905	10,367	35,441
1999	06/26 to 09/26	3,221	48,205	19,533	914	11,545
2000	07/02 to 09/22	3,295	42,197	14,720	2,530	19,676
Kanektok River Tower						
1996	7/2-7/13; 7/20-7/25	6,827 ^b	71,637 ^b	70,617 ^b		
1997	06/11 to 08/21	16,731 ^b	96,348 ^b	51,180 ^b	7,872 ^b	23,172 ^b
1998	07/23 to 08/17					
1999	Not Operational					
2000	Not Operational					

^a Pink salmon can pass freely through the Kogruklu River weir.

^b No counts or incomplete count as project was not operated during a significant portion of the species' migration.

^c Aniak River sonar counts after 1983 represent multiple species, however, chum salmon are assumed to be the dominant species during the operational period.

^d Reliable escapement estimates are not available from Aniak River sonar for 1995.

^e The original Aniak River sonar BEG of 250,000 fish counts has been carried forward to the user configurable project, but the BEG will be reassessed as more information is gathered.

^f Field operations were incomplete; full season fish passage was estimated.

Appendix A.8. Mean salmon weights and prices paid to commercial permit holders in the Kuskokwim Area, 1967-2000.

Year	Average Weight (lb)					Average Price (\$)				
	Chinook	Sockeye	Chum	Pink	Coho	Chinook	Sockeye	Chum	Pink	Coho
1967	27.8	7.4	7.0	a	5.9	0.13	0.05	0.04	a	0.09
1968	23.8	6.2	7.9	4.0	7.2	0.16	0.10	0.04	0.05	0.09
1969	19.6	6.2	5.8	3.6	7.3	0.19	0.15	0.07	0.06	0.10
1970	18.9	5.4	6.1	3.3	7.3	0.20	0.21	0.08	0.08	0.14
1971 ^b	26.2	6.9	6.4	a	6.1	0.17	0.10	0.08	a	0.13
1972	24.7	a	6.5	a	6.4	0.20	a	0.08	a	0.16
1973	26.7	a	6.8	a	5.8	0.25	a	0.19	a	0.26
1974	17.1	6.3	6.8	4.1	7.5	0.46	0.34	0.25	0.23	0.27
1975	14.9	a	6.4	a	8.2	0.54	a	0.26	a	0.31
1976 ^c	17.0	6.7	7.0	3.5	7.8	0.64	0.43	0.27	0.25	0.40
1977	22.7	8.3	7.3	3.9	7.8	1.15	0.45	0.45	0.25	0.65
1978	24.2	6.5	8.9	3.9	7.1	0.50	0.49	0.32	0.12	0.40
1979	16.6	6.9	7.0	3.9	7.9	0.66	0.53	0.37	0.11	0.75
1980	14.1	6.7	6.4	3.6	6.9	0.47	0.31	0.24	0.12	0.64
1981	17.8	7.2	7.5	3.5	6.4	0.84	0.61	0.23	0.11	0.63
1982	19.3	7.2	7.3	3.6	7.3	0.82	0.41	0.22	0.05	0.53
1983	18.8	6.8	7.4	3.5	6.8	0.54	0.51	0.33	0.05	0.39
1984	16.4	6.6	6.7	3.2	7.7	0.89	0.52	0.28	0.07	0.55
1985	17.0	7.0	7.1	3.6	7.5	0.71	0.59	0.25	0.05	0.51
1986	17.0	7.2	6.8	3.4	6.4	0.80	0.70	0.25	0.05	0.60
1987	15.2	7.5	6.8	3.7	7.2	1.10	1.30	0.27	0.10	0.73
1988	14.1	7.3	6.9	3.4	7.2	1.30	1.42	0.40	0.15	1.25
1989	16.6	7.2	6.8	3.4	7.3	0.75	1.20	0.26	0.05	0.55
1990	15.1	6.7	6.9	3.2	6.5	0.56	1.05	0.26	0.12	0.62
1991	15.3	6.9	6.3	3.4	6.5	0.56	0.67	0.31	0.12	0.45
1992	13.4	7.0	6.8	3.9	7.3	0.66	0.90	0.32	0.06	0.45
1993	14.3	7.1	6.5	3.4	6.6	0.62	0.70	0.40	0.25	0.58
1994	15.6	6.9	6.6	3.6	7.6	0.51	0.53	0.21	0.08	0.57
1995	17.3	6.9	6.9	3.7	7.2	0.60	0.71	0.18	0.12	0.41
1996	15.7	7.2	7.2	3.8	8.0	0.26	0.40	0.11	0.12	0.25
1997	16.2	7.1	7.3	2.7	7.5	0.28	0.42	0.12	0.10	0.33
1998	14.2	6.8	6.9	3.8	7.8	0.27	0.53	0.13	0.10	0.32
1999	15.5	6.5	7.3	3.0	6.6	0.32	0.58	0.10	0.05	0.32
2000	15.6	6.8	7.6	3.2	6.9	0.39	0.55	0.10	0.10	0.28
10-Year										
Average	15.3	6.9	6.9	3.4	7.2	0.45	0.63	0.21	0.11	0.42
(1990-1999)										

^a Information unavailable.^b Information on price per pound was not available for District 5.^c Information was not available for District 4.

Appendix A.9. Maximum, mean, and minimum number of permits used in a single period by district, 1962-2000.

Year	District 1			District 2			District 4			District 5		
	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.
1962	190	121	25				32	19	7		Closed	
1963	103	17	1	17	10	2	30	13	1		Closed	
1964	113	30	1	30	4	1	29	15	1		Closed	
1965	164	43	1	5	3	1	31	13	1		Closed	
1966	172	122	61	1	1	1	12	8	1		Closed	
1967	208	144	10	4	2	1	19	8	1		Closed	
1968	262	164	2				78	38	8	17	13	5
1969	274	161	1	11	2	1	119	51	1	28	21	10
1970	320	198	22	11	6	3	75	48	21	25	16	5
1971	355	117	5	20	14	2	48	36	3	11	9	8
1972	341	149	28	12	10	8				12	9	5
1973	372	234	3	18	11	1	70	42	17	17	10	5
1974	444	272	25							40	23	7
1975	483	280	12				106	47	13	30	20	10
1976	495	357	174	55	33	11	99	44	5	35	13	4
1977	487	380	204	83	54	24	172	70	7	21	15	5
1978	509	390	72	24	12	3	123	38	3	24	15	5
1979	549	456	179	33	27	20	126	63	12	27	19	6
1980	482	421	319	37	23	12	101	56	3	35	22	9
1981	541	442	278	151	42	11	106	69	30	38	24	10
1982	499	414	302	47	7	10	107	67	5	30	25	7
1983	547	442	323	34	24	9	134	70	10	62	30	11
1984	542	411	39	33	17	8	165	82	34	47	38	29
1985	530	446	262	15	11	6	191	84	7	47	34	12
1986	600	489	234	27	9	3	216	86	2	52	31	19
1987	607	513	132	22	16	13	253	105	48	75	41	23
1988	640	583	408	21	17	13	202	73	9	68	39	22
1989	679	509	126	22	17	14	140	77	51	65	39	10
1990	653	614	534	18	16	14	218	106	1	58	27	1
1991	662	589	512	19	17	16	227	81	4	50	28	1
1992	653	577	374	21	15	9	187	86	19	91	34	17
1993	654	556	274	17	16	13	219	94	10	80	40	10
1994	606	501	157	17	13	6	171	69	13	88	34	2
1995	617	469	219	16	7	1	239	87	41	68	32	16
1996	541	351	194	6	3	1	120	65	41	40	28	13
1997	513	455	353	3	3	2	178	78	4	42	21	7
1998	496	392	154	3	2	0	116	64	25	37	23	14
1999	409	398	389	0	0	0	125	72	23	58	23	2
2000	414 ^a	315 ^a	141 ^a	4	3	2	128	67	24	29	21	2

a Combined effort from consecutive Subdistricts W-1A and W-1B openings

Appendix A.10. Kuskokwim Area subsistence Chinook salmon harvest by community, 1960 - 2000.

Community	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Kipnuk	248	11	123	75	a						
Kwigillingok	250	35	43	106	339	a	250	957	70		220
Kongiganak	b	b	b	b						385	891
Tuntutuliak	226	2,226	842	2,853	1,826	1,575	3,097	3,462	2,214	2,195	3,558
Eek				c	c	2,921	4,572	2,566	2,038	2,065	1,882
Kasigluk & Eek					1,857	3,123					
Kasigluk	135	1,215	127	1,302	c	c	1,032	2,766	1,485	2,888	3,931
Nunapitchuk	683	2,042	848	1,874	636	490	2,213	1,926	1,750	2,279	4,680
Atmautluak	b	b	b	b	b	b	b	b	b	b	1,205
Napakiaik	1,830	2,573	2,191	3,148	2,677	2,872	3,658	3,895	2,468	3,546	4,960
Napaskiak	536	1,258	759	1,569	2,201	1,071	2,710	2,998	1,663	2,227	3,446
Oscarville	1,968	282	75	309	339	688	322	1,127	393	457	542
Bethel	1,923	4,150	1,378	7,019	4,114	3,371	8,046	13,925	6,205	7,472	17,026
Kwethluk	2,692	3,763	2,329	5,050	3,262	2,887	6,551	6,993	2,848	3,187	7,932
Akiachak	1,626	3,052	1,800	2,533	3,488	3,685	4,904	5,543	3,755	2,602	7,022
Akiak	1,865	3,159	906	2,869	2,495	1,345	3,670	3,660	1,822	1,275	3,290
Tuluksak	737	1,486	493	1,295	572	1,021	1,576	1,709	1,048	1,131	1,995
Lower Kalskag	961	571	c	c	710	c	c	c	1,502	2,102	2,146
Upper Kalskag	667	1,049	c	c	1,143	c	c	c	1,619	1,623	734
Kalskags Comb.			805	2,661		1,395	3,379	3,567			
Aniak	1,057	688	185	602	1,104	c	2,072	1,280	517	1,406	2,136
Aniak ^d					642						
Chuathbaluk	64	54	10	30	74	c	139	217	34	180	219
Napaimute	20	16	44	52	134	a	78	60	94	19	22
Crooked Creek	747	518	561	859	1,358	374	1,446	585	77	541	684
Georgetown							12		0	9	2
Red Devil	c	40	c	c	c	c			111	142	232
Sleetmute	c	222	c	c	c	c	303	343	207	267	161
Sleetmute ^e	465	262	144	228	314	79					
Kashegelo ^f							10				
Stony River	435	25	31		299	79	636	303	176	2,187	105
Lime Village										50	15
Mcgrath							300	25			
Takotna											
Nikolai											
Telida											
Quinhagak								1,349	2,756		
Goodnews Bay											
Platinum											
Total	18,887	28,934	13,582	34,482	29,017	24,697	49,325	61,262	35,698	40,617	69,612

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Appendix A.10. (Page 2 of 4)

Community	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Kipnuk ^a											
Kwigillingok ^a	200	10				75	382	75			
Kongiganak	41					122	361				
Tuntutuliak	1,841	3,214	2,859	1,577	3,492	4,807	2,470	1,656	2,268	2,545	4,446
Eek	1,969		1,981	2,356	2,110	3,232	2,675	1,807	2,003	1,557	1,731
Kasigluk	1,645	1,292	1,864	1,411	1,713	1,613	1,324	608	1,142	1,704	3,377
Nunapitchuk	1,978	2,496	2,663	1,165	2,092	2,578	2,622	2,178	2,109	2,612	2,918
Atmautluak	548	864	1,106	382	1,042	1,159	1,015	966	2,242	1,288	1,247
Napakiak	1,868	2,009	1,763	1,224	2,864	3,330	2,702	2,140	2,191	2,582	3,017
Napaskiak	1,916	1,578	2,048	900	2,303	3,566	1,989	2,122	2,085	3,160	2,911
Oscarville	570	196	586	180	891	623	672	349	629	477	495
Bethel	8,731	8,371	8,898	4,631	11,688	13,215	9,408	6,905	11,564	12,591	15,367
Kwethluk	5,564	5,137	3,444	2,694	3,179	4,193	5,563	3,172	6,919	7,627	6,167
Akiachak	4,818	3,872	2,592	1,726	3,534	4,915	5,407	2,951	4,818	5,405	3,094
Akiak	2,688	1,899	1,895	1,292	2,837	3,076	2,880	1,850	3,567	3,355	2,386
Tuluksak	1,280	1,318	1,322	883	1,338	1,411	2,906	1,906	1,489	2,807	2,446
Lower Kalskag	2,355	2,604	1,309	1,586	2,755	4,536	1,750	1,951	2,821	3,917	3,271
Upper Kalskag	601	401	938	463	1,752	1,413	2,813	1,253	1,590	1,889	1,171
Aniak	1,076	2,105	1,030	1,952	1,391	1,490	4,991	1,331	2,634	2,750	3,102
Chuathbaluk	179	261	942	674	594	657	1,507	1,238	2,189	1,507	841
Napaimute	17	20	13	6	16	420	176	144	149	90	45
Crooked Creek	291	183	269	650	238	264	619	488	728	654	512
Georgetown							66			93	
Red Devil	135	182	138	205	623	195	324	153	488	255	298
Sleetmute	181	69	504	269	256	356	684	300	755	220	728
Kashegelok ¹						156	233	92			
Stony River	402	95	287	439	761	620	33	182	171	332	233
Lime Village	2,119				100	33			38		
McGrath									581		
Takotna									65		
Nikolai									60		500
Telida											
Quinhagak							2,012	2,328	1,420	1,940	2,562
Goodnews Bay							574		228	498	1,309
Platinum									110	192	100
Total	43,013	38,176	38,451	26,665	47,569	58,055	58,158	38,145	57,053	62,047	64,274

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Community	1982	1983	1984	1985	1986	1987	1988 ¹	1989	1990	1991	1992
Kipnuk ^q	60							54	108	80	
Kwigillingok ^q											9
Kongiganak	52			235			585	1,412	1,442	778	904
Tuntutuliak	1,984	2,523	3,519	2,644	2,452	2,522	2,741	3,781	4,044	4,143	3,524
Eek	2,578	2,040		1,436			2,212	1,580	4,920	2,360	2,232
Kasigluk	3,115			2,054			1,367	2,173	3,167	2,955	94
Nunapitchuk	2,577	2,688		2,019	3,410	3,372	2,297	3,170	3,199	4,106	3,575
Atmautluak	1,752			1,559			1,131	1,227	2,569	1,784	1,422
Napakiak	3,500	2,047		1,805		2,760	3,091	3,710	4,158	2,543	3,328
Napaskiak	2,872			2,155		2,907	3,898	4,699	4,972	3,864	4,133
Oscarville	523			916		745	415	1,591	898	1,422	122
Bethel	13,516	8,492	11,066	6,940	11,984	8,107	15,038	24,655	19,641	28,817	17,196
Kwethluk	5,897		6,732	4,937	5,824	8,779	10,976	7,562	9,218	7,511	6,504
Akiachak	4,468		5,588	3,254		4,871	9,563	5,504	7,168	5,657	4,163
Akiak	2,745		3,413	2,975		3,683	3,706	4,811	5,178	3,247	3,207
Tuluksak	2,220	1,671	2,286	2,749		3,712	3,289	3,791	1,878	3,351	2,382
Lower Kalskag	2,594		3,242	1,707	1,666		3,024	3,337	2,494	3,947	2,269
Upper Kalskag	963		657	605	587		859	1,256	1,558	1,105	1,366
Aniak	2,071	3,174	1,847	1,828	4,624	2,131	4,071	3,406	3,189	3,261	3,955
Chuathbaluk	1,491			1,102			34	403	1,674	791	933
Napaimute	138			53							
Crooked Creek	515			218			618	451	929	947	472
Red Devil	273			176			263	189	273	168	328
Sleetmute	242		154	745			433	420	711	770	801
Stony River	419			167			315	692	498	586	233
Lime Village							341	105	240	60	
McGrath	160	830	730	59			440	418	1,231	880	1,038
Takotna							100	62	62	0	0
Nikolai	778	750	795	615			136	716	560	421	605
Telida								1			0
Quinhagak	2,402	2,542	3,109	2,341	2,682	3,663	3,690	3,542	6,013	3,693	3,447
Goodnews Bay	1,185	1,004	597	399	513	640	289	419	351	894	318
Platinum	51	62	32	27	42	176	21	48	188	23	56
Mekoryuk ^q								0	0	0	0
Newtok ^q							14	5	1	0	
Nightmute ^q							17	0	3	20	
Toksook Bay ^q							81	127	143	25	49
Tununak ^q							52	5	0	15	
Other											21
Total	61,141	51,020 ⁿ	60,668 ⁿ	45,720	54,256 ⁿ	71,804 ⁿ	75,107	85,322	92,678	90,224	68,665

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Community	1993	1994	1995	1996	1997	1998	1999	2000
Kipnuk ^a	348	150				119	29	170
Kwigillingok ^a	80	7		15		100		
Kongiganak	781	1,271	843	830	1,609	1,250	1,320	1,299
Tuntutuliak	3,633	4,679	4,023	4,027	3,730	4,008	3,645	2,939
Eek	2,619	2,917	3,535	2,568	2,253	2,131	1,816	2,112
Kasigluk	548	694	392	579	880	541	480	731
Nunapitchuk	3,810	4,746	4,400	3,234	4,086	4,934	4,521	3,354
Atmautluak	1,818	1,819	1,918	1,801	1,768	1,452	1,469	1,174
Napakiak	3,972	3,545	3,902	3,784	2,873	3,504	2,380	2,178
Napaskiak	5,671	6,356	4,984	4,453	4,887	5,452	3,827	4,309
Oscarville	1,475	1,385	1,438	996	512	981	2,289	
Bethel	22,083	24,515	29,568	20,783	21,253	23,963	24,996	22,515
Kwethluk	9,181	9,262	8,931	9,183	6,872	7,940	6,081	4,925
Akiachak	7,231	8,081	6,571	5,209	7,414	6,507	5,373	6,124
Akiak	4,280	4,759	4,118	4,569	3,378	3,311	2,356	2,190
Tuluksak	3,755	4,534	4,333	3,143	5,627	3,701	2,348	2,432
Lower Kalskag	3,930	3,976	5,321	2,870	3,549	2,041	1,787	1,822
Upper Kalskag	1,679	1,340	1,396	1,351	1,107	1,244	1,688	1,237
Aniak	4,618	3,413	3,422	3,204	3,794	3,508	2,596	3,117
Chuathbaluk	1,447	1,043	2,615	880	1,290	810	1,110	303
Crooked Creek	771	968	934	864	944	772	681	575
Red Devil	487	379	425	337	452	262	161	94
Sleetmute	1,767	1,327	885	1,230	1,171	947	447	430
Stony River	445	359	559	597	863	445	55	21
Lime Village	41	216	144	48	59	241	155	45
McGrath	567	1,052	800	1,203	974	769	1,295	642
Takotna	0	0		0		2	0	0
Nikolai	475	449	979	305	232	330	288	155
Telida								
Quinhagak	3,368	3,995	2,746	3,075	3,433	4,041	3,167	3,106
Goodnews Bay	628	712	858	403	437	713	805	601
Platinum	80	72	25	12	12	5	66	102
Mekoryuk ^a	0	6		0		1	15	2
Newtok ^a	0	2						19
Nightmute ^a		8					6	8
Toksook Bay ^a	128	341	94	45	47	48	407	58
Tununak ^a	5	0				40	0	52
Chefornak ^a						2		
Other								
Total	91,721	98,378	100,159	81,598	85,506	86,115	77,660	68,841

Blanks indicate missing data.

a Data collected, combined with unspecified village or villages.

b Village not yet founded.

c Data collected, but reported with another village.

d Aniak, Chuathbaluk and Russian Mission.

e Sleetmute to Red Devil.

f Kashegelo and Holitna.

g Reported catch only.

h Estimate based on a sample of villages surveyed.

i Beginning in 1988, estimate based on new formula, data not comparable to previous years.

Appendix A.11. Kuskokwim Area subsistence sockeye salmon harvest by community, 1985 - 2000.

Community	1985	1986	1987	1988 ^c	1989	1990	1991	1992	1993	1994	1995
Kipnuk ^a					402	175	136		90	132	
Kwigillingok ^a								0	140	5	
Kongiganak	130			830	658	423	533	905	705	702	530
Tuntutuliak	1,498	288	991	600	1,173	1,954	1,768	1,894	955	3,185	1,134
Eek	241			336	170	1,177	489	671	406	461	283
Kasigluk	1,138			376	235	810	1,421	81	122	275	165
Nunapitchuk	1,447	905	1,187	884	1,026	1,098	2,277	2,273	2,545	1,555	882
Atmautluak	1,308			320	1,143	1,501	881	1,304	1,387	796	1,099
Napakiak	1,242		1,439	1,087	1,752	1,375	1,176	1,315	1,150	1,627	959
Napaskiak	1,181		2,199	1,120	721	1,227	2,673	2,428	3,495	1,933	1,605
Oscarville	942		438	1,752	404	153	711	35	932	324	414
Bethel	3,409	7,730	3,810	5,614	7,316	6,392	17,669	7,173	10,503	8,563	8,190
Kwethluk	5,584	5,423	3,845	5,190	2,414	4,055	3,723	1,829	3,790	3,742	2,504
Akiachak	3,182		3,532	4,890	2,420	3,176	4,123	3,095	4,545	3,323	2,019
Akiak	1,368		1,883	1,378	2,492	1,739	1,708	1,458	3,558	1,786	643
Tuluksak	1,620		1,733	1,493	2,314	1,120	3,595	2,034	2,492	1,393	1,244
Lower Kalskag	948	783		1,581	767	851	1,092	467	2,339	950	681
Upper Kalskag	187	1,182		345	338	287	276	333	349	298	55
Aniak	2,116	2,652	2,101	1,078	959	1,356	2,031	1,180	1,578	571	975
Chuathbaluk	1,797			44	215	1,178	1,246	471	823	995	472
Napaimute	125										
Crooked Creek	1,218			327	436	1,556	998	489	831	512	192
Red Devil	205			437	356	445	426	315	717	311	620
Sleetmute	1,351			898	776	1,060	1,164	855	1,609	1,158	1,083
Stony River	585			195	1,084	835	1,912	1,462	1,488	802	1,342
Lime Village					5,653	2,333	956	0	2,800	1,760	700
McGrath			0	0	0	0	0	0	0	0	0
Takotna			0	0	0	0	0	0	0	0	0
Nikolai			0	0	0	0	0	0	0	0	0
Telida				0	0			0			
Quinhagak	106	423	1,067	1,261	633	1,951	1,772	1,264	1,082	1,000	573
Goodnews Bay	562	860	834	898	710	970	1,132	669	784	669	219
Platinum	142	83	121	167	151	153	150	158	51	101	34
Mekoryuk ^a				1	0	50	1	0	1	87	
Newtok ^a					10	3	0		0	20	
Nightmute ^a					0	10	210			15	
Toksook Bay ^a					277	242	105	1	66	228	5
Tununak ^a					83	7	50		30	0	
Other ^a								1	1		
Total	33,632	20,239 ^b	25,180 ^b	33,102	37,088	39,662	56,404	34,159	51,363	39,279	28,622

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Appendix A.11. (Page 2 of 2)

Community	1996	1997	1998	1999	2000
Kipnuk ^a			107	54	179
Kwigillingok ^a	10		125		
Kongiganak	722	1,128	888	991	1,789
Tuntutuliak	1,526	2,048	1,275	2,048	1,236
Eek	478	584	382	625	878
Kasigluk ^a	588	499	53	183	666
Nunapitchuk	1,735	2,330	2,250	3,493	2,111
Atmautluak	1,456	724	1,050	1,874	1,516
Napakiak	1,083	1,455	1,705	2,115	2,026
Napaskiak	2,446	2,329	1,617	2,058	2,611
Oscarville	212	78	288	2,165	
Bethel	7,112	10,868	8,134	13,145	12,536
Kwethluk	4,035	3,581	4,036	3,112	3,685
Akiachak	2,607	3,014	2,654	3,130	3,597
Akiak	1,449	1,398	1,478	1,145	970
Tuluksak	1,075	1,558	1,490	1,490	2,207
Lower Kalskag	1,144	1,455	574	605	885
Upper Kalskag	294	251	245	614	636
Aniak	1,277	1,124	1,151	1,310	1,143
Chuathbaluk	661	881	248	460	515
Crooked Creek	304	350	716	690	505
Red Devil	977	697	346	568	107
Sleetmute	1,304	1,458	1,398	946	759
Stony River	1,218	1,607	433	1,230	266
Lime Village	500	660	2,782	2,550	918
McGrath	0	20 ^d		74	42
Takotna	0	0		0	0
Nikolai	0	0		0	0
Telida					
Quinhagak	400	556	1,490	1,639	1,341
Goodnews Bay	411	472	483	770	1,028
Platinum ^a	7	137	25	102	177
Mekoryuk ^a	0		21	2	7
Newtok ^a					124
Nightmute ^a				5	71
Toksook Bay ^a	5	8	101	193	253
Tununak ^a			20	0	48
Cheformak ^a			13		
Other					
Total	35,036	41,270	37,578	49,388	44,832

Blanks indicate missing data.

a Reported harvest only.

b Estimated total based on sampled villages.

c Beginning in 1988, estimate based on new

formula, data not comparable to previous years.

d McGrath residents sometimes travel to areas downriver to harvest sockeye.

Appendix A.12. Kuskokwim Area subsistence Coho salmon harvest by community, 1985 - 2000.

Community	1985	1986	1987	1988 ^c	1989	1990	1991	1992	1993	1994	1995
Kipnuk ^a					200	460	30		25	185	
Kwigillingok ^a								0	80	0	
Kongiganak	88			1,146	562	413	540	544	502	566	605
Tuntutuliak	371	1,692	760	754	508	1,135	729	761	820	441	365
Eek	406			291	349	1,620	343	531	206	426	347
Kasigluk	1,763			906	772	958	1,769	174	228	387	518
Nunapitchuk	513	1,084	696	898	469	573	1,167	2,226	321	781	641
Atmautluak	326			337	971	350	254	518	426	411	566
Napakiak	836		959	588	1,757	1,700	597	1,237	590	920	390
Napaskiak	415		629	1,503	1,130	922	754	866	783	2,012	580
Oscarville	155		40	50	430	43	136	0		49	
Bethel	6,094	19,351	8,077	8,291	22,390	19,342	28,136	15,902	13,764	12,258	19,906
Kwethluk	3,041	3,545	2,537	5,240	3,736	3,928	2,380	2,325	1,838	1,816	1,304
Akiachak	967		286	7,927	1,890	1,621	2,393	2,108	1,351	1,531	677
Akiak	1,270		1,294	1,577	4,959	1,591	2,231	1,137	1,315	1,110	501
Tuluksak	1,723		337	1,537	1,483	946	1,903	1,544	412	285	531
Lower Kalskag	596	2,211		158	981	375	510	469	778	845	718
Upper Kalskag	105	759		136	688	300	493	931	354	184	167
Aniak	1,552	1,051	2,302	1,903	2,640	1,484	1,143	1,844	1,091	1,682	1,265
Chuathbaluk	393			72	272	813	93	349	366	795	84
Napaimute	211										
Crooked Creek	290			89	530	886	277	413	409	581	381
Red Devil	846			672	1,591	866	1,132	1,160	1,812	994	1,557
Sleetmute	1,330			1,776	1,009	1,023	1,557	1,132	880	649	1,075
Stony River	395			161	611	423	502	744	512	505	1,083
Lime Village				1,055	2,025	538	336	300	618	960	246
McGrath				790	537	2,408	882	2,780	1,989	2,558	2,225
Takotna					40	0	0	0	0	0	
Nikolai	550			530	328	73	83	173	267	119	545
Telida					60			0			
Quinhagak	67	41	125	4,317	3,787	4,174	3,232	2,958	2,152	2,739	2,561
Goodnews Bay	210			1,072	830	1,556	1,789	1,163	1,197	435	296
Platinum	11	8	43	90	77	90	39	190	29	77	9
Mekoryuk ^a					106	52	130	2	53	87	
Newtok ^a					15	4	0		0	0	
Nightmute ^a					70	0	20			0	
Toksook Bay ^a					35	46	1	15	57	116	22
Tununak ^a					9	0	0		70	0	
Other ^a							39				
Total	24,524	29,742 ^b	18,085 ^b	43,866	57,847	50,713	55,581	44,496	35,295	36,504	39,165

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Community	1996	1997	1998	1999	2000
Kipnuk ^a			85	75	223
Kwigillingok ^a	5		40		
Kongiganak	421	618	275	222	339
Tuntutuliak	1,339	669	935	331	3,435
Eek	389	80	306	258	488
Kasigluk ^a	368	518	140	92	1,667
Nunapitchuk	1,310	872	427	391	366
Atmautluak	537	531	425	205	224
Napakiaak	600	168	749	487	502
Napaskiak	398	658	540	355	889
Oscarville	19	60	2	970	
Bethel	12,929	15,108	11,294	12,414	13,794
Kwethluk	3,195	1,193	1,731	2,993	3,271
Akiachak	850	441	477	663	2,509
Akiak	972	846	674	254	483
Tuluksak	1,116	434	879	307	523
Lower Kalskag	1,022	652	347	302	428
Upper Kalskag	360	781	812	153	288
Aniak	2,671	1,494	1,308	1,418	1,922
Chuathbaluk	395	217	55	137	469
Crooked Creek	171	261	392	515	132
Red Devil	1,274	1,391	425	455	158
Sleetmute	846	419	301	226	552
Stony River	571	450	429	511	10
Lime Village	0	277	776	600	362
McGrath	919	753	924	553	700
Takotna	0		3	0	21
Nikolai	64	141	113	117	31
Telida					
Quinhagak	1,467	1,264	1,702	2,021	1,088
Goodnews Bay	293	343	312	439	414
Platinum ^a	59	54	19	143	103
Mekoryuk ^a	3		178	64	78
Newtok ^a					64
Nightmute ^a				0	2
Toksook Bay ^a	135	21	97	83	112
Tununak ^a			60	0	23
Cheformak ^a			7		
Others					
Total	34,698	30,714	27,239	27,753	35,670

Blanks indicate missing data.

a Reported harvest only.

b Estimated total based on sampled villages.

c Beginning in 1988, estimate based on new formula, data not comparable to previous years.

Appendix A.13. Kuskokwim Area subsistence chum salmon harvest by community, 1985 - 2000.

Community	1985	1986	1987	1988 ^c	1989	1990	1991	1992	1993	1994	1995
Kipnuk ^a					0	540	205		601	214	
Kwigillingok ^a								0	200	5	
Kongiganak	671			1,473	1,967	980	1,036	1,524	811	1,340	1,275
Tuntutuliak	4,346	2,734	5,385	4,700	5,068	6,250	4,755	6,052	2,899	5,232	3,488
Eek	401			1,323	972	3,090	814	1,397	244	624	815
Kasigluk	4,199			3,541	3,007	3,406	3,137	26	374	537	457
Nunapitchuk	4,346	4,676	4,621	7,331	6,923	5,240	6,055	8,229	4,854	4,587	4,297
Atmautluak	4,440			4,695	3,014	4,006	2,394	3,183	1,345	1,455	3,466
Napakiak	3,686		2,784	4,535	7,068	8,389	2,340	4,401	2,281	4,096	3,084
Napaskiak	5,810		6,832	11,623	13,079	8,166	6,582	6,061	3,622	5,605	4,271
Oscarville	1,294		1,135	2,461	1,341	925	1,141	29	566	676	1,018
Bethel	9,260	14,778	7,974	17,442	25,581	18,436	22,770	14,908	9,172	12,341	15,821
Kwethluk	6,866	9,736	7,636	21,352	10,128	11,102	5,497	7,647	3,491	6,102	6,050
Akiachak	5,931		4,355	17,749	7,747	9,133	5,994	5,771	3,492	6,286	4,074
Akiak	6,724		3,837	6,699	13,000	8,235	6,668	5,907	7,549	4,599	1,878
Tuluksak	6,064		3,466	7,046	9,796	5,845	5,695	4,798	3,834	2,476	2,609
Lower Kalskag	4,637	2,538		8,232	4,932	4,212	2,886	2,758	3,062	2,758	1,455
Upper Kalskag	1,855	3,684		3,317	3,427	1,321	2,357	2,843	578	864	1,351
Aniak	8,804	5,905	5,751	11,628	10,404	9,089	3,492	7,870	2,900	2,612	3,566
Chuathbaluk	3,782			450	2,051	4,510	1,912	2,502	2,895	1,615	1,807
Napaimute	414										
Crooked Creek	2,888			768	779	2,884	1,367	904	715	649	358
Red Devil	1,021			3,168	1,376	1,466	1,236	1,523	1,004	1,220	882
Sleetmute	3,689			4,873	1,813	1,874	1,862	3,151	681	1,533	1,758
Stony River	722			3,405	1,352	1,132	602	1,335	775	932	1,375
Lime Village				913	2,100	2,500	715	0	508	2,080	920
McGrath				639	1,276	2,839	1,068	2,854	590	1,294	1,486
Takotna				200	250	56	0	0	0	0	
Nikolai	2,900			2,404	1,221	882	495	818	353	293	301
Telida					15			0			
Quinhagak	901	808	1,084	1,065	1,568	3,234	1,593	1,833	1,008	1,452	686
Goodnews Bay	339	188	371	405	620	193	144	921	188	425	152
Platinum	9	3	207	43	164	139	5	85	0	45	3
Mekoryuk ^a				500	2,915	1,067	1,178	0	808	2,337	
Newtok ^a					20	4	0		0	0	
Nightmute ^a					30	35	60			7	
Toksook Bay ^a					86	224	103	246	296	660	239
Tununak ^a					16	65	150		30	0	
Other ^a							3	1			
Total	95,999	142,930 ^b	70,709 ^b	153,980	145,106	131,469	96,308	99,576	61,726	76,951	68,942

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Appendix A.13. (Page 2 of 2)

Community	1996	1997	1998	1999	2000
Kipnuk ^a			114	31	269
Kwigillingok ^a	30		250		
Kongiganak	1,331	902	1,643	1,152	1,850
Tuntutuliak	5,852	2,877	3,774	1,862	2,735
Eek	923	649	787	508	636
Kasigluk ^a	1,196	1,278	218	350	930
Nunapitchuk	5,833	2,794	5,389	4,742	4,694
Atmautluak	2,672	1,484	1,916	1,667	1,819
Napakiak	4,249	1,458	4,556	1,573	2,987
Napaskiak	4,983	2,589	4,227	2,687	2,848
Oscarville	1,552	35	420	1,906	
Bethel	16,403	8,790	12,057	11,163	10,616
Kwethluk	11,870	3,554	4,786	3,449	5,048
Akiachak	4,993	1,768	2,467	2,741	4,589
Akiak	4,640	1,725	2,231	1,202	2,456
Tuluksak	3,167	2,887	3,224	1,566	2,504
Lower Kalskag	3,357	1,487	977	759	1,641
Upper Kalskag	1,621	405	487	665	1,558
Aniak	8,447	1,747	5,023	1,764	1,943
Chuathbaluk	2,089	1,244	1,027	729	704
Crooked Creek	347	311	2,561	806	812
Red Devil	787	551	565	193	53
Sleetmute	1,215	417	981	367	390
Stony River	443	591	897	358	99
Lime Village	500	251	964	1,012	294
McGrath	206	111	1,462	260	161
Takotna	10		15	0	0
Nikolai	249	65	519	89	60
Telida					
Quinhagak	930	600	1,448	1,810	912
Goodnews Bay	214	133	285	250	280
Platinum ^a	5	0	31	31	84
Mekoryuk ^a	0		2,176	1,583	2,120
Newtok ^a					16
Nightmute ^a				10	2
Toksook Bay ^a	124	273	171	326	217
Tununak ^a				0	44
Chefornak ^a			17		
Other					
Total	90,238	40,976	67,665	47,612	55,371

Blanks indicate missing data.

a Reported harvest only.

b Estimated total based on sampled villages.

c Beginning in 1988, estimate based on new formula, data not comparable to previous years.

APPENDIX B

Appendix B.1. Kuskokwim River distances.^a

Location	Distance from the Mouth		Distance from Bethel	
	Kilometer	Miles	Kilometer	Miles
Popokamiut				
(Lower boundary District 1)	-3	-2	-129	-80
Kuskokwim River Mouth				
60.80 N, 162.42 W	0	0	-125	-78
Eek Island, Southernmost tip,				
(Lower boundary District 1)	19	12	-106	-66
Apokak Slough				
(Lower boundary District 1)	35	22	-90	-56
Eek River	39	24	-87	-54
Kwegooyuk	42	26	-84	-52
Kinak River	48	30	-78	-48
Tuntutuliak Village	56	35	-87	-54
Kialik River	59	37	-66	-41
Fowler Island	83	52	-42	-26
Johnson River	93	58	-32	-20
Napakiak Village	104	65	-21	-13
Napaskiak Village	115	71	-12	-7
Oscarville Village	115	71	-11	-7
Bethel City	125	78	0	0
Gweek River	145	90	20	12
Kwethluk Village	159	99	34	21
Akiachak Village	169	105	43	27
Kasigluk River	173	108	48	30
Kisaralik River	175	109	50	31
Akiak Village	190	118	64	40
Mishevik Slough,	212	132	87	54
Tuluksak Village	218	136	93	58
Nelson Island	220	137	95	59
(District 1 Boundary), Bogus Creek	234	146	109	68
High Bluffs	264	164	139	86
Boundary of District 2	295	183	170	105
Mud Creek Slough	297	185	172	107
Kalskag Village	309	192	184	114
Aniak Village, Aniak River	362	225	237	147
Chuathbaluk Village	375	233	250	155
(Upper boundary District 2)				
Kolmakof River	395	246	270	168
Napaimiut Village	410	255	285	177

(continued)

Appendix B.1. (page 2 of 2)

Location	Distance from the Mouth		Distance from Bethel	
	Kilometer	Miles	Kilometer	Miles
Holokuk River	415	258	290	180
Oskawalik River	449	279	324	201
Crooked Creek Village	466	290	341	212
Georgetown Village, George River	497	309	372	231
Red Devil Village	526	327	401	249
Sleetmute village	539	335	414	257
Holitna River	540	336	415	258
Stony River Village	585	364	460	286
Stony River	587	365	462	287
Swift River	611	380	486	302
Tatlawiksuk River	616	383	491	305
Devil's Elbow	645	401	520	323
Vinasale	740	460	615	382
McGrath Village	815	507	690	429
Middle Fork	889	553	764	475
Big River	801	560	776	482
Pitka Fork	920	572	795	494
Medra Village	928	577	803	499
South Fork	931	579	806	501
East Fork	943	586	818	508
North Fork	943	586	818	508
Nikolai Village	999	621	874	543
Swift Fork	1,136	706	1,011	628
Telida Village	1,184	736	1,059	658
Highpower Creek	1,200	746	1,075	668
Fish Creek	1,284	798	1,159	720
North Fork Lake	1,334	829	1,209	751
Top of Kuskokwim Drainage	1,498	931	1,373	853

- a These distances were taken from the USGS 1:36,300 series of topographic maps. The "mouth" was defined as the point where the "grassland" banks are 24 miles apart. Some locations are not on the mainstem of the Kuskokwim River, as a result their mileages appear to be out of sequence since they are listed in the order of the turn off.

Appendix B.2. Lower Kuskokwim River, District 1 commercial effort, 1970-2000.

Year	Unrestricted Mesh Season	Restricted Mesh Season	Coho Salmon Season	Total
1970	361	a	266	387
1971	418	216	83	422
1972	405	176	245	425
1973	456	341	411	530
1974	606	467	516	666
1975	472	540	533	737
1976	561	517	516	674
1977	563	522	572	653
1978	615	617	597	723
1979	591	617	613	685
1980	553	579	586	663
1981	589	613	586	679
1982	610	576	596	686
1983	544	619	577	679
1984	520	587	619	654
1985	b	598	627	654
1986	b	631	663	688
1987	b	680	694	703
1988	b	c	c	746

Number of Permits Landing Each Species

	<u>Chinook</u>	<u>Sockeye</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u>	<u>Roe</u>	<u>Total</u>
1989	695	688	732	261	719	22	745
1990	724	722	714	526	736	1	744
1991	687	705	731	159	733	1	749
1992	711	706	706	520	722	0	741
1993	669	654	717	54	715	0	740
1994	651	666	682	664	700	0	706
1995	684	692	680	80	699	0	712
1996	482	514	615	196	593	17	620
1997	445	446	593	2	551	0	604
1998	555	568	580	48	589	0	618
1999	412	425	388	2	442	0	509
2000	210	328	515	5	353	0	532

Ten Year

Average	602	610	641	225	648	2	674
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(1990-1999)

a No commercial salmon season.

b No unrestricted mesh season.

c Fishery continued without interruption.

Appendix B.3. Utilization of chinook salmon in the Kuskokwim River, 1960-2000.

Year	Commercial Harvest ^a	Subsistence Harvest ^b	Test Fishery Harvest	Total Utilization	10-Year Average
1960	5,969	18,887		24,856	
1961	18,918	28,934		47,852	
1962	15,341	13,582		28,923	
1963	12,016	34,482		46,498	
1964	17,149	29,017		46,166	
1965	21,989	24,697		46,686	
1966	25,545	49,325	285	75,155	
1967	29,986	59,913	766	90,665	
1968	34,278	32,942	608	67,828	
1969	43,997	40,617	833	85,447	56,008
1970	39,290	69,612	857	109,759	64,498
1971	40,274	43,242	756	84,272	68,140
1972	39,454	40,396	756	80,606	73,308
1973	32,838	39,093	577	72,508	75,909
1974	18,664	27,139	1,236	47,039	75,997
1975	22,135	48,448	704	71,287	78,457
1976	30,735	58,606	1,206	90,547	79,996
1977	35,830	56,580	1,264	93,674	80,297
1978	45,641	36,270	1,445	83,356	81,850
1979	38,966	56,283	979	96,228	82,928
1980	35,881	59,892	1,033	96,806	81,632
1981	47,663	61,329	1,218	110,210	84,226
1982	48,234	58,018	542	106,794	86,845
1983	33,174	47,412	1,139	81,725	87,767
1984	31,742	56,930	231	88,903	91,953
1985	37,889	43,874	79	81,842	93,009
1986	19,414	51,019	130	70,563	91,010
1987	36,179	67,325	384	103,888	92,032
1988	55,716	70,943 ^c	576	127,235	96,419
1989	43,217	81,176	543	124,936	99,290
1990	53,504	85,979	512	139,995	103,609
1991	37,778	85,554	117	123,449	104,933
1992	46,872	64,795	1,380	113,047	105,558
1993	8,735	87,512	2,483	98,730	107,259
1994	16,211	93,242	1,937	111,390	109,508
1995	30,846	96,436	1,421	128,703	114,194
1996	7,419	78,063	247	85,729	115,710
1997	10,441	81,577	332	92,350	114,556
1998	17,359	81,265	210	98,834	111,716
1999	4,705	73,194	98	77,997	107,022
2000	444	64,893	64	65,401	99,563
10-Yr. Ave. (1990-1999)	23,387	82,762	874	107,022	

^a Districts 1 and 2; also includes harvests in District 3 from 1960 to 1965.^b Estimated subsistence harvest expanded from villages surveyed.^c Beginning in 1988, estimates are based on a new formula so data since 1988 is not comparable with previous years.

Appendix B.4. Peak aerial survey counts of chinook salmon in indexed Kuskokwim River spawning tributaries, 1975 - 2000^a.

Year	Lower Kuskokwim				Middle Kuskokwim						Upper Kuskokwim		
	Eek	Kwethluk Canyon C.	Kisaralik	Tuluksak	Aniak	Kipchuk (Aniak)	Salmon (Aniak)	Holokuk	Oskawalik	Holitna	Kogrukluk Weir	Cheeneetnuk	Salmon (Pitka)
1975			118			94		17	71	1,114			
1976				139		177		126	204	2,571	5,579	1,197	1,146
1977		2,290		291			562	60	276			1,399	1,978
1978	1,613	1,732	2,417	403			289			2,766	13,667	267	1,127
1979		911						113			11,338		699
1980	2,378			725			1,186	250	123				1,177
1981		1,783	672		9,074		894				16,655		1,474
1982	230				2,645		185	42	120	521	10,993		419
1983	188	471	731	129	1,909		231	33	52	1,069		243	586
1984		273	157	93	1,409					299	4,926	1,177	577
1985	1,118	629		135				135	61		4,619	1,002	625
1986					909		336	100		850	5,038	381	
1987	1,739	975		60		193	516	208	193	813		317	
1988	2,255	766	840	188	945		244	57	80		8,506		501
1989	1,042	1,157	152		1,880	994	631				11,940		446
1990	1,983	1,295	631	166	1,255	537	596	143	113		10,218		
1991	1,312	1,002		342	1,564	885	583				7,850		
1992					2,284	670	335	64	91	1,822	6,755	1,050	2,555
1993					2,687	1,248	1,082	114	103	1,573	12,332	678	1,012
1994		848	1,021		1,848	1,520	1,218				15,227	1,206	1,010
1995			1,243		3,174	1,215	1,442	181	289	2,787	20,630	1,565	1,911
1996					3,496		983	85			14,199		
1997			439	173	2,187	855	980	322	1,470	2,093	13,280	345	
1998		27	457		2,239	353							
1999								18	98	741	5,570		
2000					714	182	152	42	62	501	3,181		
BEG	1,460 ^b	1,200 ^c	1,000 ^c	400 ^c	1,500 ^c	670 ^b	600 ^c	107 ^b	108 ^b	2,000 ^c	10,000 ^c	1,002 ^b	1,300 ^c

a Estimates are from "peak" aerial surveys conducted between 20 and 31 July under fair, good, or excellent viewing conditions.

b Median of years 1975 through 1994.

c Formally established BEG (Buklis 1993).

Appendix B.5. Historical commercial salmon harvest in the Kuskokwim River, Districts 1 and 2 combined, 1960-2000^a

Year	Chinook	Sockeye	Chum	Pink	Coho	Total
1960	5,969	0	0	0	2,498	8,467
1961	18,918	0	0	0	5,044	23,962
1962	15,341	0	0	0	12,432	27,773
1963	12,016	0	0	0	15,660	27,676
1964	17,149	0	0	0	28,613	45,762
1965	21,989	0	0	0	12,191	34,180
1966	25,545	0	0	0	22,985	48,530
1967	29,986	0	148	0	56,313	86,447
1968	34,278	0	187	0	127,306	161,771
1969	43,997	322	7,165	0	83,765	135,249
1970	39,290	117	1,664	44	38,601	79,716
1971	40,274	2,606	68,914	0	5,253	117,047
1972	39,454	102	78,619	8	22,579	140,762
1973	32,838	369	148,746	33	130,876	312,862
1974	18,664	136	171,887	84	147,269	338,040
1975	22,135	23	184,171	10	81,945	288,284
1976	30,735	2,971	177,864	133	88,501	300,204
1977	35,830	9,379	248,721	203	241,364	535,497
1978	45,641	733	248,656	5,832	213,393	514,255
1979	38,966	1,054	261,874	78	219,060	521,032
1980	35,881	360	483,211	803	222,012	742,267
1981	47,663	48,375	418,677	292	211,251	726,258
1982	48,234	33,154	278,306	1,748	447,117	808,559
1983	33,174	68,855	276,698	211	196,287	575,225
1984	31,742	48,575	423,718	2,942	623,447	1,130,424
1985	37,889	106,647	199,478	75	335,606	679,695
1986	19,414	95,433	309,213	3,422	659,988	1,087,470
1987	36,179	136,602	574,336	43	399,467	1,146,627
1988	55,716	92,025	1,381,674	10,825	524,296	2,064,536
1989	43,217	42,747	749,182	464	479,856	1,315,466
1990	53,504	84,870	461,624	3,397	410,332	1,013,727
1991	37,778	108,946	431,802	378	500,935	1,079,839
1992	46,872	92,218	344,603	7,451	666,170	1,157,314
1993	8,735	27,008	43,337	64	610,739	689,883
1994	16,211	49,365	271,115	30,949	724,689	1,092,329
1995	30,846	92,500	605,918	93	471,461	1,200,818
1996	7,419	33,878	207,877	1,621	937,299	1,188,094
1997	10,441	21,989	17,026	2	130,803	180,261
1998	17,359	60,906	207,809	92	210,481	496,647
1999	4,705	16,976	23,006	2	23,593	68,282
2000	444	4,130	11,570	7	261,379	277,530
10-Year Average (1990-1999)	23,387	58,866	261,412	8702 ^b	468,650	816,719

a Includes harvests in District 3 from 1960 to 1965.

b Even years only.

Appendix B.6. Utilization of chum salmon in the Kuskokwim River, 1960-2000.

Year	Commercial Harvest ^a	Subsistence Harvest ^b	Test Fishery Harvest	Total Utilization	Running 10-Year Average
1960	0	301,753 ^c		301,753	
1961	0	179,529 ^c		179,529	
1962	0	161,849 ^c		161,849	
1963	0	137,649 ^c		137,649	
1964	0	190,191 ^c		190,191	
1965	0	250,878 ^c		250,878	
1966	0	175,735 ^c	502 ^d	176,237	
1967	148	208,445 ^c	338	208,931	
1968	187	275,008 ^c	562	275,757	
1969	7,165	204,105 ^c	384	211,654	209,443
1970	1,664	246,810 ^c	1,139 ^d	249,613	204,229
1971	68,914	116,391 ^c	254	185,559	204,832
1972	78,619	120,316 ^c	486	199,421	208,589
1973	148,746	179,259 ^c	675	328,680	227,692
1974	171,887	277,170 ^c	2,021	451,078	253,781
1975	184,171	176,389 ^c	1,062	361,622	264,855
1976	177,864	223,792 ^c	2,101	403,757	287,607
1977	248,721	198,355 ^c	576	447,652	311,479
1978	248,656	118,809 ^c	2,153	369,618	320,865
1979	261,874	161,239 ^c	412	423,525	342,053
1980	483,751	165,172 ^c	2,058	650,981	382,189
1981	418,677	157,306 ^c	1,793	577,776	421,411
1982	278,306	190,011 ^c	504	468,821	448,351
1983	276,698	146,876 ^c	1,069	424,643	457,947
1984	423,718	142,542 ^c	1,186	567,446	469,584
1985	199,478	94,750	616	294,844	462,906
1986	309,213	141,931 ^c	1,693	452,837	467,814
1987	574,336	70,709	2,302	647,347	487,784
1988	1,381,674	151,967 ^c	4,379	1,538,020	604,624
1989	749,182	139,687	2,082	890,951	651,367
1990	461,624	126,508	2,107	590,239	645,292
1991	431,802	93,075	931	525,808	640,096
1992	344,603	96,491	15,330	456,424	638,856
1993	43,337	59,396	8,451	111,184	607,510
1994	271,115	72,025	11,998	355,138	586,279
1995	605,918	67,862	17,473	691,253	625,920
1996	207,877	88,965	2,864	299,706	610,607
1997	17,026	39,970	790	57,786	551,651
1998	207,809	63,537	1,140	272,486	425,098
1999	23,006	43,601	562	67,169	342,719
2000	11,571	51,696	1,038	64,305	290,126
10-Yr. Ave.					
(1990-1999)	261,412	75,143	6,165	342,719	

^a Districts 1 and 2 only; no chum harvests were reported in District 3.^b Estimated subsistence harvest expanded from villages surveyed.^c Includes small numbers of small chinook, sockeye and coho salmon.^d Includes small numbers of sockeye.^e Beginning in 1988, estimates are based on a new formula so data since 1988 is not comparable with previous years.

Appendix B.7. Historical commercial salmon catches by fishing period in Kuskokwim Area District 1, 1974-2000.

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1974	Jun 10 - 11 ^a	422	12	5,064	4,384	0.9	1	0.0	153	0.0	0	0.0
	Jun 13 - 14 ^a	488	12	5,856	5,790	1.0	2	0.0	607	0.1	0	0.0
	Jun 17 - 18 ^a	506	12	6,072	5,857	1.0	62	0.0	1,394	0.2	0	0.0
	Jun 27 ^b	267	6	1,602	558	0.3	0	0.0	27,017	16.9	0	0.0
	Jul 01 - 02 ^b	380	12	4,560	561	0.1	26	0.0	55,356	12.1	0	0.0
	Jul 04 - 05 ^b	282	12	3,384	196	0.1	0	0.0	27,211	8.0	0	0.0
	Jul 08 - 09 ^b	376	12	4,512	286	0.1	1	0.0	50,672	11.2	0	0.0
	Jul 18 ^b	190	6	1,140	31	0.0	0	0.0	6,661	5.8	19	0.0
	Aug 01 - 02 ^b	267	12	3,204	17	0.0	9	0.0	813	0.3	9,576	3.0
	Aug 05 - 08 ^b	444	72	31,968	18	0.0	35	0.0	1,170	0.0	59,090	1.8
	Aug 12 - 15 ^b	396	72	28,512	12	0.0	0	0.0	103	0.0	58,066	2.0
	Aug 19 - 22 ^b	263	72	18,936	0	0.0	0	0.0	32	0.0	12,301	0.6
	Aug 26 - 29 ^b	107	72	7,704	1	0.0	0	0.0	10	0.0	5,360	0.7
	Sept. 02 - 05 ^b	25	72	1,800	0	0.0	0	0.0	0	0.0	430	0.2
Total		666	456	124,314	17,711		136		171,199		144,842	
1975	Jun 16 ^a	12	6	72	359	4.99	0	0.0	3	0.0	0	0.0
	Jun 19 - 20 ^a	46	12	552	1,031	1.87	0	0.0	34	0.1	0	0.0
	Jun 23 - 24 ^a	483	12	5,796	17,235	2.97	0	0.0	3,792	0.7	0	0.0
	Jun 30 ^b	276	6	1,656	691	0.42	0	0.0	31,216	18.9	0	0.0
	Jul 03 ^b	360	6	2,160	636	0.29	0	0.0	35,525	16.4	0	0.0
	Jul 07 ^b	369	6	2,214	421	0.19	0	0.0	39,396	17.8	0	0.0
	Jul 10 ^b	304	6	1,824	195	0.11	0	0.0	39,910	21.9	0	0.0
	Jul 14 ^b	326	6	1,956	179	0.09	0	0.0	21,092	10.8	0	0.0
	Aug 01 ^b	142	6	852	5	0.01	0	0.0	2,113	2.5	2,357	2.8
	Aug 04 - 06 ^b	292	48	14,016	40	0.00	1	0.0	5,639	0.4	12,500	0.9
	Aug 11 - 13 ^b	373	48	17,904	8	0.00	0	0.0	2,247	0.1	18,551	1.0
	Aug 18 - 20 ^b	388	48	18,624	16	0.00	3	0.0	746	0.0	34,435	1.8
	Aug 25 - 27 ^b	270	48	12,960	0	0.00	0	0.0	73	0.0	16,277	1.3
Total		737	258	80,586	20,816		4		181,786		84,120	
1976	Jun 17 ^a	459	6	2,754	6,962	2.5	1	0.0	532	0.2	0	0.00
	Jun 21 ^a	495	6	2,970	13,048	4.4	0	0.0	2,543	0.9	0	0.00
	Jun 28 ^b	348	6	2,088	4,143	2.0	508	0.2	42,464	20.3	0	0.00
	Jul 01 ^b	415	6	2,490	1,550	0.6	338	0.1	44,024	17.7	0	0.00
	Jul 08 ^b	381	6	2,286	894	0.4	1,268	0.6	48,669	21.3	0	0.00
	Jul 12 ^b	344	6	2,262	344	0.2	701	0.3	21,153	9.4	0	0.00
	Jul 15 ^b	265	6	1,590	236	0.1	151	0.1	14,176	8.9	44	0.03
	Aug 02 - 03 ^b	286	24	6,864	83	0.0	0	0.0	2,067	0.3	10,534	1.53
	Aug 09 - 11 ^b	400	48	19,200	96	0.0	3	0.0	866	0.0	29,728	1.55
	Aug 16 - 18 ^b	387	48	18,576	50	0.0	1	0.0	154	0.0	28,664	1.54
	Aug 23 - 25 ^b	300	48	14,400	10	0.0	0	0.0	69	0.0	14,543	1.01
	Aug 30 - 31 ^b	174	42	7,308	2	0.0	0	0.00	10	0.0	4,420	0.60
Total		674	252	82,788	27,418		2,971		176,727		87,933	
1977	Jun 15 ^a	467	6	2,802	12,458	4.45	20	0.0	334	0.12	0	0.00
	Jun 20 ^a	484	6	2,904	16,227	5.59	18	0.0	1,715	0.59	0	0.00
	Jun 27 ^b	378	6	2,268	1,337	0.59	1,386	0.6	40,321	17.78	0	0.00
	Jun 30 ^b	409	6	2,454	504	0.21	3,655	1.5	58,884	24.00	0	0.00
	Jul 04 ^b	331	6	1,986	266	0.13	1,952	1.0	37,500	18.88	0	0.00
	Jul 07 ^b	368	6	2,208	407	0.18	1,799	0.8	56,943	25.79	0	0.00
	Jul 14 ^b	385	6	2,310	153	0.07	77	0.0	24,765	10.72	1	0.00
	Aug 01 - 02 ^b	360	24	8,640	91	0.01	392	0.0	7,157	0.83	23,987	2.78
	Aug 08 ^b	487	48	23,376	117	0.01	59	0.0	3,306	0.14	91,474	3.91
	Aug 15 - 16 ^b	438	24	10,512	57	0.01	4	0.0	1,161	0.11	60,935	5.80
	Aug 18 ^b	378	12	4,536	13	0.00	1	0.0	224	0.05	25,589	5.64
	Aug 22 ^b	361	12	4,332	12	0.00	6	0.0	202	0.05	16,980	3.92
	Aug 25 ^b	264	12	3,168	12	0.00	0	0.0	127	0.04	11,874	3.75
	Aug 29 ^b	204	12	2,448	5	0.00	0	0.0	42	0.02	6,819	2.79
Total		653	186	73,944	31,659		9,369		232,681		237,659	

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Year	Date	Number of	Hours	Permit	Chinook		Sockeye		Chum		Coho	
		Permits	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1978	Jun 09 ^a	509	6	3,054	7,590	2.49	10	0.0	734	0.24	0	0.00
	Jun 14 ^a	266	6	1,596	6,142	3.85	0	0.0	1,291	0.81	0	0.00
	Jun 16 ^a	396	6	2,376	12,341	5.19	22	0.0	5,950	2.50	0	0.00
	Jun 22 ^a	72	4	288	1,724	5.99	0	0.0	1,629	5.66	0	0.00
	Jun 23 ^a	429	4	1,716	8,342	4.86	0	0.0	12,587	7.34	0	0.00
	Jun 26 ^b	499	5	2,694	1,964	0.73	1	0.0	44,296	16.44	0	0.00
	Jun 29 ^b	422	6	2,652	1,759	0.66	52	0.0	36,793	13.87	0	0.00
	Jul 03 ^b	476	6	2,856	894	0.31	93	0.0	26,629	9.32	0	0.00
	Jul 06 ^b	485	12	5,820	1,460	0.25	302	0.1	48,031	8.25	0	0.00
	Jul 10 ^b	428	12	5,136	694	0.14	216	0.0	48,931	9.53	0	0.00
	Jul 13 ^b	422	6	2,532	293	0.12	0	0.0	14,935	5.90	0	0.00
	Aug 01 ^b	297	12	3,564	97	0.03	23	0.0	3,298	0.93	6,311	1.77
	Aug 04 ^b	364	12	4,368	79	0.02	6	0.0	906	0.21	9,445	2.16
	Aug 08 ^b	433	12	5,196	65	0.01	4	0.0	629	0.12	28,501	5.49
	Aug 11 ^b	485	12	5,820	39	0.01	2	0.0	280	0.05	42,428	7.29
	Aug 15 ^b	476	12	5,712	33	0.01	0	0.0	87	0.02	48,950	8.57
	Aug 18 ^b	434	12	5,208	16	0.00	2	0.0	67	0.01	29,485	5.66
	Aug 22 ^b	396	12	4,752	8	0.00	0	0.0	53	0.01	22,287	4.69
	Aug 25 ^b	293	12	3,516	12	0.00	0	0.0	13	0.00	11,168	3.18
	Aug 29 ^b	250	12	3,000	1	0.00	0	0.0	80	0.03	12,215	4.07
Total		723	182	71,856	43,553		733		247,219		210,790	
1979	Jun 11 ^a	523	6	3,138	12,270	3.91	14	0.00	462	0.15	0	0.00
	Jun 15 ^a	549	6	3,294	12,363	3.75	37	0.01	2,055	0.62	0	0.00
	Jun 22 ^b	502	6	3,012	5,651	1.88	50	0.02	32,295	10.72	0	0.00
	Jun 26 ^b	531	6	3,186	2,277	0.71	23	0.01	53,648	16.84	0	0.00
	Jun 29 ^b	542	6	3,252	1,583	0.49	8	0.00	48,643	14.96	0	0.00
	Jul 03 ^b	542	6	3,252	1,233	0.38	21	0.01	83,164	25.57	0	0.00
	Jul 10 ^b	520	6	3,120	470	0.15	23	0.01	32,434	10.40	0	0.00
	Aug 02 ^b	478	12	5,736	67	0.01	186	0.03	3,643	0.64	52,276	9.11
	Aug 06 ^b	480	6	2,880	38	0.01	54	0.02	1,148	0.40	53,797	18.68
	Aug 09 ^b	497	6	2,982	34	0.01	19	0.01	502	0.17	26,422	8.86
	Aug 13 ^b	463	6	2,778	20	0.01	11	0.00	179	0.06	27,915	10.05
	Aug 16 ^b	467	6	2,802	16	0.01	4	0.00	129	0.05	21,675	7.74
	Aug 20 ^b	390	6	2,340	23	0.01	7	0.00	104	0.04	19,445	8.31
	Aug 23 ^b	328	6	1,968	0	0.00	0	0.00	54	0.03	5,376	2.73
	Aug 27 ^b	310	12	3,720	6	0.00	2	0.00	40	0.01	6,342	1.70
	Aug 30 ^b	179	12	2,148	2	0.00	1	0.00	16	0.01	2,182	1.02
Total		685	114	49,608	36,053		460		258,516		215,430	
1980	Jun 12 ^a	469	6	2,814	9,891	3.51	2	0.00	711	0.25	0	0.00
	Jun 18 ^a	468	6	2,808	16,921	6.03	24	0.01	5,940	2.12	0	0.00
	Jun 23 ^b	426	6	2,616	4,777	1.83	0	0.00	105,825	40.45	0	0.00
	Jun 26 ^b	408	6	2,448	1,460	0.60	0	0.00	131,945	53.90	0	0.00
	Jul 02 ^b	383	6	2,298	498	0.22	23	0.01	122,613	53.36	0	0.00
	Jul 09 ^b	431	6	2,586	445	0.17	4	0.00	90,233	34.89	0	0.00
	Aug 04 ^b	375	6	2,250	54	0.02	73	0.03	2,697	1.20	9,889	4.40
	Aug 07 ^b	455	6	2,730	45	0.02	67	0.02	2,098	0.77	36,126	13.23
	Aug 11 ^b	482	6	2,892	33	0.01	64	0.02	4,350	1.50	35,178	12.16
	Aug 14 ^b	439	6	2,634	23	0.01	38	0.01	366	0.14	28,211	10.71
	Aug 18 ^b	441	6	2,646	12	0.00	25	0.01	179	0.07	43,748	16.53
	Aug 21 ^b	419	6	2,514	10	0.00	26	0.01	94	0.04	33,274	13.24
	Aug 25 ^b	370	6	2,220	12	0.01	9	0.00	64	0.03	19,264	8.68
	Aug 28 ^b	319	6	1,914	3	0.00	5	0.00	19	0.01	13,484	7.04
Total		663	84	35,370	34,184		360		467,134		219,174	

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Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1981	Jun 10 ^a	489	6	2,934	11,897	4.05	48	0.0	2,623	0.89	0	0.00
	Jun 16 ^a	541	6	3,246	17,985	5.54	316	0.1	11,501	3.54	0	0.00
	Jun 22 ^b	511	6	3,066	3,830	1.25	3,852	1.3	78,168	25.50	0	0.00
	Jun 25 ^b	508	6	3,048	2,000	0.66	6,037	2.0	81,431	26.72	0	0.00
	Jun 30 ^b	484	6	2,904	2,563	0.88	12,262	4.2	51,942	17.89	0	0.00
	Jul 02 ^b	459	6	2,754	1,707	0.62	9,769	3.5	58,594	21.28	0	0.00
	Jul 06 ^b	461	6	2,766	1,088	0.39	5,510	2.0	55,799	20.17	0	0.00
	Jul 09 ^b	440	6	2,640	941	0.36	7,760	2.9	66,138	25.05	0	0.00
	Aug 03 ^b	430	6	2,580	101	0.04	1,057	0.4	1,866	0.72	16,184	6.27
	Aug 06 ^b	441	6	2,646	77	0.03	674	0.3	1,046	0.40	13,885	5.25
	Aug 10 ^b	445	6	2,670	54	0.02	454	0.2	629	0.24	26,972	10.10
	Aug 13 ^b	473	6	2,838	54	0.02	233	0.1	448	0.16	46,252	16.30
	Aug 17 ^b	458	6	2,748	38	0.01	146	0.1	164	0.06	34,739	12.64
	Aug 20 ^b	380	6	2,280	17	0.01	55	0.0	73	0.03	24,184	10.61
	Aug 24 ^b	372	6	2,232	16	0.01	28	0.0	40	0.02	23,771	10.65
	Aug 27 ^b	346	6	2,076	16	0.01	25	0.0	59	0.03	13,785	6.64
	Aug 31 ^b	278	6	1,668	8	0.00	20	0.0	21	0.01	8,086	4.85
Total		679	102	45,096	42,011		45,554		410,542		207,858	
1982	Jun 14 ^a	464	6	2,784	4,912	1.76	321	0.12	2,532	0.91	0	0.00
	Jun 17 ^a	496	6	2,892	11,285	3.90	1,061	0.37	4,694	1.62	0	0.00
	Jun 21 ^a	499	6	2,994	13,343	4.46	2,432	0.81	10,003	3.34	0	0.00
	Jun 24 ^a	459	4	1,836	8,548	4.66	3,157	1.72	12,908	7.03	0	0.00
	Jun 28 ^b	352	4	1,408	1,943	1.38	9,938	7.06	58,528	41.57	0	0.00
	Jun 30 ^b	483	4	1,932	2,064	1.07	5,824	3.01	47,773	24.73	0	0.00
	Jul 02 ^b	434	4	1,736	1,095	0.63	3,110	1.79	38,918	22.42	0	0.00
	Jul 05 ^b	372	6	2,232	875	0.39	2,769	1.24	29,315	13.13	0	0.00
	Jul 08 ^b	435	6	2,610	748	0.29	1,786	0.68	28,942	11.09	2	0.00
	Jul 12 ^b	354	6	2,124	307	0.14	638	0.30	20,709	9.75	23	0.01
	Jul 29 ^b	416	6	2,496	114	0.05	48	0.02	2,599	1.04	19,561	7.84
	Aug 02 ^b	388	6	2,328	67	0.03	69	0.03	949	0.41	31,944	13.72
	Aug 05 ^b	445	6	2,670	47	0.02	26	0.01	624	0.23	35,766	13.40
	Aug 09 ^b	442	6	2,652	29	0.01	25	0.01	342	0.13	61,231	23.09
	Aug 12 ^b	449	6	2,694	26	0.01	6	0.00	189	0.07	80,685	29.95
	Aug 16 ^b	420	6	2,520	15	0.01	5	0.00	96	0.04	77,785	30.87
	Aug 19 ^b	403	6	2,418	12	0.00	12	0.00	69	0.03	49,566	20.50
	Aug 23 ^b	349	6	2,094	3	0.00	5	0.00	28	0.01	25,218	12.04
	Aug 26 ^b	314	6	1,884	9	0.00	0	0.00	18	0.01	26,761	14.20
	Aug 30 ^b	302	6	1,812	7	0.00	1	0.00	18	0.01	26,815	14.80
Total		686	112	46,116	45,120		31,233		259,254		435,357	
1983	Jun 13 ^a	489	6	2,934	7,445	2.54	114	0.04	829	0.28	0	0.00
	Jun 16 ^a	450	6	2,700	5,961	2.21	156	0.06	976	0.36	0	0.00
	Jun 20 ^b	474	6	2,844	4,776	1.68	3,289	1.16	28,915	10.17	0	0.00
	Jun 23 ^b	450	6	2,700	3,287	1.22	4,807	1.78	24,625	9.12	0	0.00
	Jun 27 ^b	446	6	2,676	2,566	0.96	10,465	3.91	44,802	16.74	0	0.00
	Jun 30 ^b	547	6	3,282	2,359	0.72	12,490	3.81	55,209	16.82	0	0.00
	Jul 04 ^b	443	6	2,658	1,213	0.46	24,540	9.23	46,176	17.37	0	0.00
	Jul 07 ^b	496	6	2,976	1,202	0.40	7,286	2.45	36,965	12.42	0	0.00
	Jul 11 ^b	466	6	2,796	633	0.23	3,001	1.07	20,560	7.35	0	0.00
	Aug 01 ^b	377	6	2,262	238	0.11	478	0.21	4,041	1.79	9,767	4.32
	Aug 04 ^b	430	6	2,580	237	0.09	272	0.11	2,580	1.00	15,389	5.96
	Aug 08 ^b	383	6	2,298	130	0.06	444	0.19	1,322	0.58	34,541	15.03
	Aug 11 ^b	485	6	2,910	96	0.03	146	0.05	534	0.18	35,268	12.12
	Aug 15 ^b	462	6	2,772	64	0.02	71	0.03	148	0.05	24,072	8.68
	Aug 18 ^b	408	6	2,448	56	0.02	52	0.02	111	0.05	22,822	9.32
	Aug 22 ^b	388	6	2,328	53	0.02	39	0.02	88	0.04	34,918	15.00
	Aug 26 ^b	323	6	1,938	27	0.01	31	0.02	55	0.03	19,039	9.82
Total		679	102	45,102	29,442		67,681		267,936		195,816	

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Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1984	Jun 18 ^a	484	6	2,904	10,845	3.73	409	0.14	5,803	2.00	0	0.0
	Jun 21 ^a	443	6	2,658	6,336	2.38	2,618	0.98	22,094	8.31	0	0.0
	Jun 25 ^b	466	6	2,796	3,018	1.08	10,743	3.84	91,773	32.82	0	0.0
	Jun 28 ^b	470	6	2,820	2,625	0.93	10,942	3.88	67,120	23.80	0	0.0
	Jul 02 ^b	483	6	2,898	1,988	0.69	8,145	2.81	69,897	24.12	0	0.0
	Jul 05 ^b	426	6	2,556	1,218	0.48	6,798	2.66	54,981	21.51	1	0.0
	Jul 09 ^b	496	6	2,976	1,211	0.41	2,821	0.95	36,440	12.24	52	0.0
	Jul 12 ^b	436	6	2,616	858	0.33	12,277	0.84	24,269	9.28	196	0.1
	Jul 16 ^b	373	6	2,238	744	0.33	1,121	0.50	18,613	8.32	619	0.3
	Jul 30 ^b	459	6	2,754	351	0.13	281	0.10	2,329	0.85	56,609	20.6
	Aug 02 ^b	401	6	2,406	291	0.12	157	0.07	1,184	0.49	79,240	32.9
	Aug 06 ^b	542	9	4,878	106	0.02	113	0.02	639	0.13	84,406	17.3
	Aug 09 ^b	523	9	4,707	106	0.02	111	0.02	373	0.08	80,990	17.2
	Aug 13 ^b	504	9	4,536	81	0.02	67	0.01	235	0.05	80,268	17.7
	Aug 16 ^b	502	9	4,518	50	0.01	29	0.01	131	0.03	78,342	17.3
	Aug 20 ^b	491	9	4,419	33	0.01	14	0.00	59	0.01	63,829	14.4
	Aug 23 ^b	481	9	4,329	21	0.00	11	0.00	63	0.01	49,372	11.4
	Aug 27 ^b	350	9	3,150	53	0.02	2	0.00	18	0.01	16,472	5.2
	Aug 30 ^b	210	9	1,890	9	0.00	1	0.00	5	0.00	11,222	5.9
	Sept 03 ^b	69	5	360	2	0.01	0	0.00	5	0.01	1,603	4.5
	Sept 06 ^b	39	6	234	0	0.00	0	0.00	0	0.00	1,877	8.0
Total		654	149	62,643	29,946		46,571		396,031		605,098	
1985	Jun 20	423	6	2,538	6,519	2.57	5,246	2.07	19,762	7.79	0	0.00
	Jun 24	488	6	2,928	10,413	3.56	25,536	8.72	42,778	14.61	0	0.00
	Jun 27	492	6	2,952	8,791	2.98	26,155	8.86	47,443	16.07	0	0.00
	Jul 1	514	6	3,084	6,168	2.00	31,082	10.08	47,471	15.39	0	0.00
	Jul 4	460	6	2,760	3,774	1.37	16,114	5.84	28,581	10.36	0	0.00
	Aug 01	487	6	2,922	204	0.07	174	0.06	2,470	0.85	34,052	11.65
	Aug 05	527	6	3,162	121	0.04	33	0.01	1,558	0.49	54,819	17.34
	Aug 08	525	6	3,150	58	0.02	3	0.00	472	0.15	78,149	24.81
	Aug 12	530	6	3,180	44	0.01	7	0.00	342	0.11	77,809	24.47
	Aug 15	441	6	2,646	28	0.01	0	0.00	193	0.07	28,013	10.59
	Aug 19	406	6	2,436	13	0.01	2	0.00	32	0.01	19,316	7.93
	Aug 22	390	6	2,340	10	0.00	0	0.00	56	0.02	17,534	7.49
	Aug 26	297	6	1,782	8	0.00	0	0.00	22	0.01	10,688	6.00
	Aug 29	262	6	1,572	8	0.01	1	0.00	28	0.02	9,568	6.09
Total		654	84	37,452	36,159		104,353		191,208		329,948	
1986	Jun 26	514	6	3,084	7,786	2.52	40,468	13.12	68,947	22.36	1	0.00
	Jun 30	576	6	3,456	4,200	1.22	22,633	6.55	60,780	17.59	0	0.00
	Jul 03	556	6	3,336	3,224	0.97	15,766	4.73	65,839	19.74	0	0.00
	Jul 07	586	6	3,516	1,805	0.51	8,347	2.37	55,983	15.92	0	0.00
	Jul 10	532	6	3,192	1,156	0.36	5,488	1.72	48,990	15.35	0	0.00
	Jul 31	352	6	2,112	60	0.03	219	0.10	2,239	1.06	27,553	13.05
	Aug 04	530	6	3,180	49	0.02	201	0.06	1,345	0.42	96,127	30.23
	Aug 07	600	9	5,400	66	0.01	38	0.01	50	0.01	127,024	23.52
	Aug 11	553	6	3,318	32	0.01	3	0.00	9	0.00	82,215	24.78
	Aug 13	526	6	3,156	32	0.01	2	0.00	3	0.00	92,918	29.44
	Aug 15	519	6	3,114	67	0.02	4	0.00	11	0.00	55,633	17.87
	Aug 18	477	6	2,862	15	0.01	4	0.00	0	0.00	51,328	17.93
	Aug 21	465	6	2,790	8	0.00	2	0.00	2	0.00	50,640	18.15
	Aug 25	458	6	2,748	4	0.00	0	0.00	0	0.00	37,365	13.60
	Aug 28	346	6	2,076	0	0.00	0	0.00	3	0.00	16,436	7.92
	Sept 01	234	6	1,404	6	0.00	0	0.00	0	0.00	5,949	4.24
Total		688	99	48,744	18,510		93,175		304,201		643,189	

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Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1987	Jun 18	526	9	4,734	19,126	4.04	9,508	2.01	14,137	2.99	0	0.00
	Jun 24	607	9	5,463	0 ^c	0.00	24,355	4.46	54,454	9.97	0	0.00
	Jun 30	564	9	5,076	0 ^c	0.00	39,112	7.71	112,963	22.25	0	0.00
	Jul 03	580	6	3,480	5,970	1.72	44,030	12.65	66,783	19.19	0	0.00
	Jul 07	578	6	3,468	3,636	1.05	9,196	2.65	103,059	29.72	0	0.00
	Jul 11	597	6	3,582	1,910	0.53	4,611	1.29	72,118	20.13	1	0.00
	Jul 15	569	6	3,414	1,415	0.41	2,301	0.67	71,923	21.07	10	0.00
	Jul 20	551	6	3,306	1,343	0.41	826	0.25	65,135	19.70	500	0.15
	Aug 06	590	6	3,540	207	0.06	271	0.08	4,074	1.15	49,182	13.89
	Aug 13	604	6	3,624	103	0.03	222	0.06	894	0.25	104,968	28.96
	Aug 17	595	6	3,570	76	0.02	133	0.04	378	0.11	73,867	20.69
	Aug 19	585	6	3,510	36	0.01	25	0.01	156	0.04	45,277	12.90
	Aug 21	540	6	3,240	26	0.01	16	0.00	140	0.04	33,601	10.37
	Aug 24	500	6	3,000	27	0.01	4	0.00	108	0.04	27,607	9.20
	Aug 27	479	6	2,874	13	0.00	9	0.00	70	0.02	21,772	7.58
	Aug 31	364	6	2,184	7	0.00	5	0.00	57	0.03	12,873	5.89
	Sept 03	278	6	1,668	8	0.00	3	0.00	31	0.02	11,352	6.81
	Sept 07	132	6	792	4	0.01	4	0.01	19	0.02	4,311	5.44
Total		703	117	60,525	33,907		134,631		566,499		385,321	
1988	Jun 16	602	8	4,816	12,640	2.62	7,408	1.54	72,219	15.00	0	0.00
	Jun 20	612	6	3,672	11,708	3.19	14,502	3.95	113,628	30.94	0	0.00
	Jun 24	644	6	3,864	9,710	2.51	19,894	5.15	119,808	31.01	0	0.00
	Jun 28	609	6	3,654	5,350	1.46	17,628	4.82	154,027	42.15	0	0.00
	Jul 02	580	6	3,480	3,531	1.01	15,102	4.34	187,916	54.00	0	0.00
	Jul 05	579	6	3,474	2,340	0.67	7,284	2.10	163,971	47.20	9	0.00
	Jul 08	604	6	3,624	1,891	0.52	3,623	1.00	138,772	38.29	1	0.00
	Jul 11	598	6	3,588	1,628	0.45	2,467	0.69	137,450	38.31	24	0.01
	Jul 14	597	6	3,582	1,751	0.49	822	0.23	116,930	32.64	141	0.04
	Jul 18	567	6	3,402	1,107	0.33	396	0.12	57,749	16.98	502	0.15
	Jul 21	539	6	3,234	621	0.19	164	0.05	39,643	12.26	1,278	0.40
	Jul 25	494	6	2,964	329	0.11	109	0.04	24,893	8.40	6,323	2.13
	Jul 28	552	6	3,312	333	0.10	70	0.02	16,028	4.84	20,970	6.33
	Aug 01	594	6	3,564	201	0.06	32	0.01	6,967	1.95	33,954	9.53
	Aug 04	639	6	3,834	206	0.05	105	0.03	5,152	1.34	76,576	19.97
	Aug 08	640	6	3,840	114	0.03	92	0.02	2,890	0.75	76,345	19.88
	Aug 10	596	6	3,576	73	0.02	9	0.00	1,376	0.38	53,874	15.07
	Aug 12	624	6	3,744	115	0.03	11	0.00	1,422	0.38	84,700	22.62
	Aug 15	613	6	3,678	76	0.02	14	0.00	663	0.18	59,724	16.24
	Aug 18	620	6	3,720	37	0.01	8	0.00	230	0.06	37,415	10.06
	Aug 20	577	6	3,462	29	0.01	5	0.00	121	0.03	24,046	6.95
	Aug 27	532	6	3,192	14	0.00	8	0.00	93	0.03	22,683	7.11
	Aug 31	408	6	2,448	6	0.00	11	0.00	34	0.01	9,852	4.02
Total		746	140	81,724	53,810		89,764		1,361,982		508,417	
1989	Jun 19	374	8	2,992	9,204	3.08	5,495	1.84	41,789	13.97	0	0.0
	Jun 23	277	8	2,216	6,011	2.71	7,011	3.16	65,650	29.63	0	0.0
	Jun 26	126	8	1,008	1,862	1.85	3,746	3.72	32,373	32.12	0	0.0
	Jun 30	642	8	5,136	9,232	1.80	10,214	1.99	131,629	25.63	0	0.0
	Jul 03	629	6	3,774	4,600	1.22	5,808	1.54	91,345	24.20	0	0.0
	Jul 05	553	6	3,318	3,311	1.00	2,917	0.88	85,727	25.84	3	0.0
	Jul 08	621	6	3,726	3,136	0.84	3,177	0.85	119,066	31.96	9	0.0
	Jul 11	616	6	3,696	1,691	0.46	1,565	0.42	78,053	21.12	126	0.0
	Jul 14	590	6	3,540	1,216	0.34	796	0.22	44,401	12.54	230	0.0
	Jul 18	437	6	2,622	868	0.33	451	0.17	26,407	10.07	2,216	0.1
	Jul 27	562	6	3,372	210	0.06	95	0.03	5,716	1.70	5,651	0.7
	Aug 03	679	6	4,074	174	0.04	30	0.01	3,615	0.89	99,022	24.3
	Aug 07	642	6	3,852	78	0.02	22	0.01	868	0.23	73,514	19.1
	Aug 09	644	6	3,864	40	0.01	7	0.00	432	0.11	103,158	26.7
	Aug 12	650	6	3,900	34	0.01	8	0.00	122	0.03	81,970	21.0
	Aug 15	616	6	3,696	25	0.01	4	0.00	119	0.03	23,071	6.2
	Aug 18	381	6	2,286	7	0.00	5	0.00	16	0.01	5,938	2.6
	Aug 23	528	6	3,168	19	0.01	14	0.00	21	0.01	30,940	9.8
	Aug 26	508	6	3,048	17	0.01	13	0.00	15	0.00	20,881	6.9
	Aug 29	423	6	2,538	7	0.00	9	0.00	21	0.01	11,080	4.4
	Sept 01	194	6	1,164	3	0.00	1	0.00	7	0.01	3,225	2.8
Total		745	134	66,990	41,745		41,388		727,392		461,034	

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Year	Date	Number of	Hours	Permit	Chinook		Sockeye		Chum		Coho	
		Permits	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1990	Jun 20	630	6	3,780	16,690	4.42	10,318	16.38	30,306	8.02	0	0.00
	Jun 25	611	6	3,666	16,031	4.37	27,024	44.23	58,944	16.08	0	0.00
	Jun 29	645	6	3,870	9,428	2.44	18,774	29.11	74,911	19.36	0	0.00
	Jul 05	591	6	3,546	4,071	1.15	10,759	18.20	86,835	24.49	0	0.00
	Jul 09	589	6	3,534	2,804	0.79	8,757	14.87	91,411	25.87	0	0.00
	Jul 14	625	8	5,000	2,127	0.43	5,467	8.75	79,803	15.96	70	0.01
	Aug 01	611	6	3,666	252	0.07	533	0.87	9,065	2.47	23,549	6.42
	Aug 06	631	6	3,786	306	0.08	133	0.21	4,597	1.21	61,450	16.23
	Aug 10	653	6	3,918	94	0.02	66	0.10	1,269	0.32	58,251	14.87
	Aug 13	642	6	3,852	38	0.01	48	0.07	509	0.13	115,444	29.97
	Aug 16	650	9	5,850	28	0.00	29	0.04	239	0.04	68,605	11.73
	Aug 20	594	6	3,564	11	0.00	34	0.06	113	0.03	51,838	14.54
	Aug 27	534	6	3,204	3	0.00	16	0.03	25	0.01	16,030	5.00
	Total	743	83	51,236	51,883		81,958		438,027		395,237	
1991	Jun 20	601	6	3,606	13,813	3.83	19,732	5.47	13,266	3.68	0	0.00
	Jun 24	616	6	3,696	12,612	3.41	19,262	5.21	30,632	8.29	0	0.00
	Jul 01	629	6	3,774	5,966	1.58	24,428	6.47	50,121	13.28	0	0.00
	Jul 06	589	6	3,534	2,102	0.59	24,219	6.85	40,060	11.34	0	0.00
	Jul 13	571	6	3,426	904	0.26	6,458	1.88	52,552	15.34	16	0.00
	Jul 18	568	6	3,408	452	0.13	5,128	1.50	78,797	23.12	977	0.29
	Jul 22	543	6	3,258	233	0.07	3,085	0.95	49,788	15.28	2,655	0.81
	Jul 25	533	8	4,264	186	0.04	1,526	0.36	30,083	7.06	4,871	1.14
	Jul 29	534	8	4,272	134	0.03	732	0.17	24,026	5.62	37,141	8.69
	Aug 01	602	6	3,612	125	0.03	624	0.17	13,098	3.63	38,284	10.60
	Aug 05	643	8	5,144	56	0.01	96	0.02	6,091	1.18	56,262	10.94
	Aug 08	634	8	5,072	33	0.01	40	0.01	3,194	0.63	72,037	14.20
	Aug 12	662	8	5,296	42	0.01	31	0.01	1,586	0.30	114,581	21.64
	Aug 14	601	8	4,808	18	0.00	23	0.00	634	0.13	58,393	12.14
	Aug 19	590	6	3,540	24	0.01	24	0.01	313	0.09	57,364	16.20
	Aug 26	512	8	4,096	6	0.00	12	0.00	93	0.02	43,664	10.66
	Total	749	110	64,806	36,706		105,420		394,334		486,245	
1992	Jun 18	567	8	4,536	9,756	2.15	8,508	1.88	32,695	7.21	0	0.00
	Jun 22	619	8	4,952	14,578	2.94	25,017	5.05	74,429	15.03	0	0.00
	Jun 25	627	8	5,016	8,984	1.79	21,922	4.37	55,114	10.99	0	0.00
	Jun 29	602	6	3,612	7,323	2.03	26,082	7.22	80,213	22.21	0	0.00
	Jul 06	587	8	4,696	3,250	0.69	7,962	1.70	84,196	17.93	2	0.00
	Aug 03	619	8	4,952	306	0.06	137	0.03	4,069	0.82	78,233	15.80
	Aug 06	590	6	3,540	116	0.03	98	0.03	1,319	0.37	57,506	16.24
	Aug 11	653	6	3,918	157	0.04	76	0.02	664	0.17	181,905	46.43
	Aug 14	632	6	3,792	63	0.02	55	0.01	196	0.05	87,959	23.20
	Aug 17	596	6	3,576	47	0.01	49	0.01	122	0.03	79,357	22.19
	Aug 20	578	6	3,468	36	0.01	17	0.00	53	0.02	73,363	21.15
	Aug 24	550	6	3,300	27	0.01	19	0.01	23	0.01	28,069	8.51
	Aug 27	481	6	2,886	26	0.01	6	0.00	26	0.01	28,238	9.78
	Aug 31	374	6	2,244	8	0.00	8	0.00	17	0.01	16,962	7.56
	Total	741	94	54,488	44,677		89,956		333,136		631,594	
1993	Jun 25	622	8	4,976	8,184	1.64	26,363	5.30	34,123	6.86	0	0.00
	Jul 31	625	6	3,750	172	0.05	210	0.06	4,133	1.10	56,107	14.96
	Aug 04	656	6	3,936	98	0.02	141	0.04	2,080	0.53	137,649	34.97
	Aug 06	632	8	5,056	88	0.02	84	0.02	1,396	0.28	91,400	18.08
	Aug 09	628	6	3,768	65	0.02	75	0.02	446	0.12	54,817	14.55
	Aug 14	640	6	3,840	46	0.01	39	0.01	287	0.07	80,226	20.89
	Aug 17	620	6	3,720	30	0.01	31	0.01	119	0.03	82,696	22.23
	Aug 21	592	6	3,552	9	0.00	25	0.01	58	0.02	47,097	13.26
	Aug 25	441	6	2,646	6	0.00	13	0.00	28	0.01	10,556	3.99
	Aug 28	387	6	2,322	12	0.01	19	0.01	30	0.01	13,592	5.85
	Sept 01	274	6	1,644	4	0.00	3	0.00	18	0.01	12,190	7.41
	Total	739	70	39,210	8,714		27,003		42,718		586,330	

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Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1994	Jun 24	576	8	4,608	14,221	3.09	38,958	8.45	87,214	18.93	0	0.00
	Jul 14	496	4	1,984	578	0.29	3,891	1.96	43,585	21.97	820	0.41
	Jul 19	500	6	3,000	441	0.15	4,475	1.49	60,104	20.03	7,027	2.34
	Jul 23	506	6	3,036	313	0.10	1,125	0.37	38,149	12.57	24,213	7.98
	Jul 26	552	6	3,312	225	0.09	471	0.14	22,460	6.78	39,901	12.05
	Jul 29	577	6	3,462	204	0.06	159	0.05	11,252	3.25	52,090	15.05
	Aug 04	606	6	3,636	88	0.06	87	0.02	3,983	1.10	75,514	20.77
	Aug 09	530	6	3,180	29	0.03	70	0.02	1,153	0.36	129,570	40.75
	Aug 12	606	8	4,848	34	0.01	47	0.01	777	0.16	117,753	24.29
	Aug 15	595	8	4,760	22	0.01	33	0.01	321	0.07	47,902	10.06
	Aug 18	598	8	4,784	20	0.00	16	0.00	212	0.04	82,750	17.30
	Aug 22	554	8	4,432	12	0.00	15	0.00	104	0.02	44,054	9.94
	Aug 25	447	8	3,576	9	0.00	7	0.00	63	0.02	37,595	10.51
	Aug 27	445	6	2,670	3	0.00	4	0.00	30	0.01	20,526	7.69
	Aug 30	263	6	1,578	2	0.00	2	0.00	16	0.01	8,192	5.19
	Sept 02	157	6	942			2	0.00	3	0.00	2,489	2.64
Total		706	106	53,808	16,201		49,362		269,426		690,396	
1995	Jun 22	569	4	2,276	6,895	3.03	4,420	1.94	49,157	21.60	0	0.00
	Jun 26	568	4	2,272	9,452	4.16	19,449	8.56	93,152	41.00	0	0.00
	Jun 29	565	4	2,260	4,972	2.20	18,188	8.05	83,580	36.98	0	0.00
	Jul 03	475	4	1,900	2,847	1.50	17,078	8.99	89,427	47.07	0	0.00
	Jul 06	481	4	1,924	1,521	0.79	14,765	7.67	81,246	42.23	0	0.00
	Jul 10	494	4	1,976	906	0.46	7,100	3.59	86,368	43.71	21	0.01
	Jul 14	435	4	1,740	546	0.31	4,219	2.42	43,137	24.79	221	0.13
	Jul 18	336	6	2,016	366	0.18	2,482	1.23	37,294	18.50	671	0.33
	Jul 21	368	4	1,472	202	0.14	940	0.64	21,039	14.29	1,272	0.86
	Aug 04	234	6	1,404	64	0.05	123	0.09	1,072	0.76	48,665	34.66
	Aug 08	611	6	3,666	95	0.03	363	0.10	1,229	0.34	98,548	26.88
	Aug 12	617	6	3,702	50	0.01	359	0.10	899	0.24	102,421	27.67
	Aug 16	593	6	3,558	52	0.01	147	0.04	208	0.06	65,713	18.47
	Aug 19	555	6	3,330	28	0.01	87	0.03	133	0.04	41,057	12.33
	Aug 22	497	6	2,982	16	0.01	113	0.04	157	0.05	43,978	14.75
	Aug 26	477	6	2,862	25	0.01	117	0.04	101	0.04	29,129	10.18
	Aug 29	355	6	2,130	15	0.01	45	0.02	39	0.02	17,790	8.35
	Sept 01	219	6	1,314	2	0.00	31	0.02	12	0.01	5,783	4.40
Total		712	92	42,784	28,054		90,026		588,250		455,269	
1996	Jun 17	245	2	490	2,045	4.17	1,850	3.78	11,560	23.59	0	0.00
	Jun 20	283	2	566	2,046	3.61	6,423	11.35	27,442	48.48	0	0.00
	Jun 24	240	1.5	360	666	1.85	4,420	12.28	19,438	53.99	0	0.00
	Jul 02	224	2	448	545	1.22	3,962	8.84	20,915	46.69	0	0.00
	Jul 05	194	2	388	316	0.81	3,481	8.97	17,651	45.49	2	0.01
	Jul 08	211	2	422	178	0.42	6,795	16.10	18,801	44.55	24	0.06
	Jul 12	237	2	474	230	0.49	3,781	7.98	26,468	55.84	1,608	3.39
	Jul 16	197	2	394	87	0.22	602	1.53	15,192	38.56	4,675	11.87
	Jul 19	267	3	801	164	0.20	298	0.37	13,390	16.72	14,746	18.41
	Jul 22	417	6	2,502	183	0.07	639	0.26	14,504	5.80	50,443	20.16
	Jul 25	487	8	3,896	124	0.03	256	0.07	9,024	2.32	113,637	29.17
	Jul 29	526	6	3,156	97	0.03	186	0.06	3,828	1.21	144,773	45.87
	Jul 31	464	6	2,784	52	0.02	92	0.03	1,541	0.55	122,946	44.16
	Aug 03	541	6	3,246	59	0.02	129	0.04	1,097	0.34	132,540	40.83
	Aug 07	514	6	3,084	43	0.01	73	0.02	581	0.19	94,332	30.59
	Aug 10	502	6	3,012	45	0.01	60	0.02	797	0.26	83,653	27.77
	Aug 13	471	6	2,826	25	0.01	82	0.03	296	0.10	70,053	24.79
	Aug 16	459	6	2,754	28	0.01	147	0.05	215	0.08	49,012	17.80
	Aug 20	400	6	2,400	19	0.01	83	0.03	51	0.02	25,870	10.78
	Aug 23	293	6	1,758	9	0.01	22	0.01	23	0.01	13,133	7.47
	Aug 26	209	6	1,254	11	0.01	23	0.02	13	0.01	8,684	6.93
Total		620	92.5	37,015	6,972		33,404		202,827		930,131	
1997	Jun 23	353	6	2,118	10,023	4.73	21,218	10.02	13,090	6.18	0	0.00
	Jul 31	429	6	2,574	141	0.05	352	0.14	2,060	0.80	14,963	5.81
	Aug 6	513	6	3,078	145	0.05	229	0.07	1,387	0.45	37,216	12.09
	Aug 12	507	6	3,042	61	0.02	122	0.04	408	0.13	56,149	18.46
	Aug 18	475	6	2,850	66	0.02	67	0.02	58	0.02	21,273	7.46
Total		604	30	13,662	10,436		21,988		17,003		129,601	

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Year	Date	Number of	Hours	Permit	Chinook		Sockeye		Chum		Coho	
		Permits	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1998	Jun 24	338	6	2,028	6,413	3.16	9,043	4.46	32,467	16.01		
	Jun 29	426	6	2,556	6,358	2.49	22,506	8.81	66,789	26.13		
	Jul 03	445	4	1,780	2,277	1.28	15,985	8.98	51,471	28.92	1	0.00
	Jul 11	417	4	1,668	1,127	0.68	10,172	6.10	29,407	17.63	23	0.01
	Jul 22	346	6	2,076	460	0.22	1,538	0.74	15,663	7.54	3,633	1.75
	Jul 27	370	6	2,220	356	0.16	932	0.42	7,500	3.38	18,497	8.33
	Aug 01	425	6	2,550	156	0.06	235	0.09	2,787	1.09	26,791	10.51
	Aug 06	496	6	2,976	88	0.03	295	0.10	1,020	0.34	45,128	15.16
	Aug 11	464	6	2,784	67	0.02	95	0.03	388	0.14	58,426	20.99
	Aug 17	439	6	2,634	34	0.01	45	0.02	122	0.05	34,640	13.15
	Aug 22	382	6	2,292	19	0.01	53	0.02	67	0.03	18,936	8.26
	Aug 29	154	6	924	1	0.00	7	0.01	17	0.02	4,093	4.43
	Total	615	68	26,488	17,356		60,906		207,698		210,168	
1999	Jun 30	409	6	2,454	4,668	1.90	16,772	6.83	22,700	9.25		
	Aug 7	389	6	2,334	37	0.02	204	0.09	306	0.13	23,593	10.1
	Total	509	12	4,788	4,705		16,976		23,006		23,593	
2000	July 5	224	4	896	357	0.40	3,658	4.1	11,026	12.3		
	Aug 1	248	6	1,488	12	0.01	94	0.1	156	0.1	25,642	17.2
	Aug 4	123	6	738	7	0.01	7	0.0	53	0.1	50,260	68.1
	Aug 5	270	6	1,620	8	0.00	73	0.0	43	0.0	32,056	19.8
	Aug 8	186	6	1,116	9	0.01	26	0.0	55	0.0	26,771	24.0
	Aug 9	217	6	1,302	13	0.01	57	0.0	128	0.1	20,905	16.1
	Aug 12	189	6	1,134	12	0.01	17	0.0	23	0.0	37,451	33.0
	Aug 14	224	6	1,344	6	0.00	75	0.1	33	0.0	16,766	12.5
	Aug 14	193	6	1,158	5	0.00	23	0.0	15	0.0	17,916	15.5
	Aug 18	199	6	1,194	6	0.01	58	0.0	16	0.0	14,697	12.3
	Aug 21	158	6	948	4	0.00	3	0.0	10	0.0	8,577	9.0
	Aug 22	143	6	858	1	0.00	32	0.0	4	0.0	4,489	5.2
	Aug 25	106	6	636	4	0.01	7	0.0	8	0.0	4,191	6.6
	Total	532	76	14,432	444	0	4,130		11,570		259,721	

^a Gillnet mesh size unrestricted.

^b Gillnets were restricted to 6 inches or less; after 1985 this restriction was in effect for all periods.

^c Sales of chinook salmon were prohibited. Estimated chinook harvest was between 12,119 and 13,615 on 6/24 and between 5,831 and 6,555 on 6/25.

Appendix B.8. Historical commercial salmon catches by fishing period in Kuskokwim Area District 2, 1974-2000.

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1974	Jun 10 - 14 ^a	26	96	2,496	549	0.2	0	0.0	16	0.0	0	0.00
	Jun 17 - 19 ^a	29	48	1,392	402	0.3	0	0.0	451	0.3	0	0.00
	Aug 5 - 9 ^a	14	96	1,344	2	0.0	0	0.0	210	0.2	990	0.7
	Aug 12 - 13 ^a	13	24	312	0	0.0	0	0.0	11	0.0	1,428	4.6
Total		37	264	5,544	953		0		688		2,418	
1975	Jun 23 - 27 ^a	38	96	3,648	1,319	0.4	0	0.0	2,385	0.7	0	0.00
Total		38	96	3,648	1,319		0		2,385		0	
1976	Jun 21 - 24 ^a	55	66	3,630	3,316	0.9	0	0.0	1,136	0.3	0	0.00
	Aug 23 - 25 ^a	11	24	264	1	0.0	0	0.0	1	0.0	568	2.15
Total		57	90	3,894	3,317		0		1,137		568	
1977	Jun 20 - 21 ^a	83	30	2,490	3,975	1.6	0	0.0	756	0.3	0	0.00
	Jul 4 ^a	54	12	648	195	0.3	10	0.0	15,160	23.4	0	0.00
	Aug 8 ^a	24	12	288	1	0.0	0	0.0	124	0.4	3,705	12.86
Total		105	54	3,426	4,171		10		16,040		3,705	
1978	Jun 14 ^a	8	6	48	359	7.5	0	0.0	59	1.2	0	0.0
	Jun 16 ^a	13	6	78	424	5.4	0	0.0	189	2.4	0	0.0
	Jun 22 ^a	9	4	36	411	11.4	0	0.0	377	10.5	0	0.0
	Jun 23 ^a	24	4	96	893	9.3	0	0.0	804	8.4	0	0.0
	Aug 18 ^b	3	12	36	0	0.0	0	0.0	0	0.0	257	7.14
	Aug 22 ^b	17	12	204	1	0.0	0	0.0	8	0.0	2,346	11.50
Total		43	44	498	2,088		0		1,437		2,603	
1979	Jun 21 ^a	29	12	348	1,030	3.0	142	0.4	982	2.8	0	0.00
	Jun 25 ^a	33	12	396	1,883	4.8	452	1.1	1,946	4.9	0	0.00
	Aug 13 ^b	20	12	240	0	0.0	0	0.0	430	1.8	3,630	15.13
Total		43	36	984	2,913		594		3,358		3,630	
1980	Jun 23 ^a	37	12	444	1,482	3.3	0	0.0	4,004	9.0	0	0.00
	Jul 09 ^b	21	6	126	215	1.7	0	0.0	11,911	94.5	0	0.00
	Aug 14 ^b	12	12	144	0	0.0	0	0.0	702	4.9	2,868	19.92
Total		43	30	714	1,697		0		16,617		2,868	
1981	Jun 16 ^a	18	6	108	933	8.6	4	0.0	810	7.5	0	0.00
	Jun 19 ^a	151	6	906	3,838	4.2	125	0.1	3,902	4.3	0	0.00
	Jun 25 ^b	11	6	66	499	7.6	0	0.0	3,329	50.4	0	0.00
	Aug 17 ^b	15	6	90	0	0.0	0	0.0	62	0.7	1,487	16.52
	Aug 20 ^b	13	6	78	1	0.0	0	0.0	32	0.4	1,896	24.31
Total		153	30	1,248	5,271		129		8,135		3,383	
1982	Jun 17 ^a	10	6	60	222	3.7	19	0.3	274	4.6	0	0.00
	Jun 21 ^a	23	6	138	769	5.6	53	0.4	817	5.9	0	0.00
	Jun 24 ^a	35	6	210	1,122	5.3	434	2.1	1,912	9.1	0	0.00
	Jul 2 ^b	24	6	144	271	1.9	607	4.2	7,060	49.0	0	0.00
	Jul 5 ^b	47	6	282	398	1.4	808	2.9	8,811	31.2	0	0.00
	Aug 9 ^b	15	6	90	2	0.0	0	0.0	144	1.6	1,841	20.46
	Aug 16 ^b	13	6	78	0	0.0	0	0.0	29	0.4	4,567	58.55
	Aug 19 ^b	21	6	126	1	0.0	0	0.0	5	0.0	5,352	42.48
Total		60	48	1,128	2,785		1,921		19,052		11,760	
1983	Jun 16 ^a	14	6	84	510	6.1	13	0.2	165	2.0	0	0.00
	Jun 20 ^b	28	6	168	746	4.4	86	0.5	2,069	12.3	0	0.00
	Jun 23 ^b	34	6	204	820	4.0	338	1.7	2,154	10.6	0	0.00
	Jun 27 ^b	33	6	198	755	3.8	736	3.7	4,276	21.6	0	0.00
	Aug 11 ^b	9	6	54	0	0.0	1	0.0	98	1.8	471	8.72
	Aug 15 ^b	0	6	0	0	0.0	0	0.0	0	0.0	0	0.00
	Aug 18 ^b	0	6	0	0	0.0	0	0.0	0	0.0	0	0.00
Total		43	42	708	2,831		1,174		8,762		471	

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Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1984	Jun 21 ^a	15	6	90	561	6.23	84	0.93	967	10.74	0	0.00
	Jun 25 ^b	25	6	150	493	3.29	543	3.62	5,705	38.03	0	0.00
	Jun 28 ^b	33	6	198	524	2.65	395	1.99	13,376	67.56	0	0.00
	Jul 2 ^b	25	6	150	204	1.36	982	6.55	7,420	49.47	0	0.00
	Aug 06 ^b	16	6	96	9	0.09	0	0.00	110	1.15	4,339	45.20
	Aug 09 ^b	11	6	66	1	0.02	0	0.00	69	1.05	4,340	65.76
	Aug 13 ^b	12	6	72	1	0.01	0	0.00	24	0.33	2,792	38.78
	Aug 16 ^b	17	6	102	1	0.01	0	0.00	16	0.16	3,652	35.80
	Aug 20 ^b	13	6	78	1	0.01	0	0.00	0	0.00	2,179	27.94
	Aug 23 ^b	8	6	48	0	0.00	0	0.00	0	0.00	1,047	21.81
	Aug 27 ^b	0	6	0	0	0.00	0	0.00	0	0.00	0	0.00
	Aug 30 ^b	0	6	0	0	0.00	0	0.00	0	0.00	0	0.00
Total		58	72	1,050	1,795		2,004		27,687		18,349	
1985	Jun 20	8	6	48	136	2.83	115	2.40	647	13.48	0	0.00
	Jun 24	11	6	66	263	3.98	340	5.15	2,411	36.53	0	0.00
	Jun 27	12	6	72	548	7.61	739	10.26	2,263	31.43	0	0.00
	Jul 1	15	6	90	779	8.66	1,100	12.22	2,854	31.71	0	0.00
	Jul 4	0	6	0	0	0.00	0	0.00	0	0.00	0	0.00
	Aug 08	6	6	36	0	0.00	0	0.00	41	1.14	739	20.53
	Aug 12	14	6	84	3	0.04	0	0.00	45	0.54	2,914	34.69
	Aug 15	11	6	66	1	0.02	0	0.00	9	0.14	2,005	30.38
Total		23	48	462	1,730		2,294		8,270		5,658	
1986	Jun 26	3	6	18	186	10.33	616	34.22	439	24.39	0	0.00
	Jun 30	13	6	78	386	4.95	1,171	15.01	1,619	20.76	0	0.00
	Jul 3	8	6	48	168	3.50	265	5.52	1,249	26.02	0	0.00
	Jul 7	2	6	12	117	9.75	26	2.17	387	32.25	0	0.00
	Jul 10	6	6	36	45	1.25	179	4.97	1,282	35.61	0	0.00
	Aug 07	8	6	48	0	0.00	0	0.00	0	0.00	2,445	50.94
	Aug 11	10	6	60	0	0.00	0	0.00	23	0.38	2,677	44.62
	Aug 13	10	6	60	0	0.00	1	0.02	13	0.22	2,787	46.45
	Aug 15	27	6	162	1	0.01	0	0.00	0	0.00	5,761	35.56
	Aug 18	8	6	48	1	0.02	0	0.00	0	0.00	1,804	37.58
	Aug 21	6	6	36	0	0.00	0	0.00	0	0.00	1,325	36.81
Total		43	66	606	904		2,258		5,012		16,799	
1987	Jul 03	15	6	90	1,325	14.72	511	5.68	3,200	35.56	0	0.00
	Jul 07	22	6	132	935	7.08	1,459	11.05	4,152	31.45	0	0.00
	Aug 13	14	6	84	4	0.05	1	0.01	304	3.62	2,273	27.06
	Aug 17	14	6	84	6	0.07	0	0.00	102	1.21	3,374	40.17
	Aug 19	13	6	78	1	0.01	0	0.00	39	0.50	3,928	50.36
	Aug 21	18	6	108	1	0.01	0	0.00	40	0.37	4,571	42.32
Total		29	36	576	2,272		1,971		7,837		14,146	
1988	Jun 24	13	6	78	669	8.58	1,041	13.35	4,232	54.26	0	0.00
	Jun 28	17	6	102	746	7.31	639	6.26	6,087	59.68	0	0.00
	Jul 2	19	6	114	468	4.11	579	5.08	8,155	71.54	0	0.00
	Aug 08	14	6	84	6	0.07	0	0.00	308	3.67	1,465	17.44
	Aug 10	16	6	96	10	0.10	0	0.00	312	3.25	3,823	39.82
	Aug 12	20	6	120	3	0.03	2	0.02	244	2.03	5,216	43.47
	Aug 15	21	6	126	1	0.01	0	0.00	144	1.14	2,317	18.39
	Aug 18	15	6	90	2	0.02	0	0.00	116	1.29	1,485	16.50
	Aug 20	17	6	102	1	0.01	0	0.00	94	0.92	1,573	15.42
Total		29	54	912	1,906		2,261		19,692		15,879	

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Year	Date	Number of	Hours	Permit	Chinook		Sockeye		Chum		Coho	
		Permits	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1989	Jun 30	15	8	120	610	5.08	587	4.89	7,353	61.28	0	0.0
	Jul 03	18	6	108	371	3.44	238	2.20	5,101	47.23	0	0.0
	Jul 05	14	6	84	264	3.14	176	2.10	3,542	42.17	0	0.0
	Jul 11	14	6	84	128	1.52	95	1.13	4,580	54.52	0	0.0
	Aug 07	22	6	132	3	0.02	0	0.00	238	1.80	6,607	50.1
	Aug 09	18	6	108	3	0.03	0	0.00	114	1.06	5,714	52.9
	Aug 15	15	6	90	1	0.01	0	0.00	7	0.08	1,867	20.7
	Aug 18	20	6	120	3	0.03	0	0.00	11	0.09	2,733	22.8
Total		30	50	846	1,383		1,096		20,946		16,921	
1990	Jun 29	14	6	84	641	7.63	735	8.75	3,838	45.69	0	0.0
	Jul 05	15	6	90	467	5.19	561	6.23	4,397	48.86	0	0.0
	Jul 09	17	6	102	255	2.50	580	5.69	5,163	50.62	0	0.0
	Jul 14	17	8	136	209	1.54	567	4.17	6,999	51.46	0	0.00
	Aug 06	15	6	90	21	0.23	5	0.06	742	8.24	1,111	12.34
	Aug 10	15	6	90	17	0.19	5	0.06	550	6.11	1,946	21.62
	Aug 13	16	6	96	4	0.04	1	0.01	276	2.88	4,192	43.67
	Aug 16	17	9	153	6	0.04	0	0.00	105	0.69	2,239	14.63
	Aug 20	18	6	108	0	0.00	0	0.00	12	0.11	2,548	23.59
	Aug 27	17	6	102	1	0.01	3	0.03	3	0.03	1,780	17.45
Total		22	65	1,051	1,621		2,457		22,085		13,816	
1991	Jul 01	17	6	102	483	4.74	1,200	11.76	3,043	29.83	0	0.0
	Jul 06	16	6	96	341	3.55	613	6.39	2,381	24.80	0	0.0
	Jul 13	18	6	108	112	1.04	981	9.08	4,384	40.59	0	0.00
	Jul 18	17	6	102	49	0.48	365	3.58	6,534	64.06	0	0.00
	Jul 22	19	6	114	28	0.25	117	1.03	7,154	62.75	17	0.15
	Jul 25	17	8	136	20	0.15	177	1.30	7,686	56.51	115	0.85
	Jul 29	16	8	128	21	0.16	70	0.55	3,452	26.97	177	1.38
	Aug 05	17	8	136	6	0.04	0	0.00	1,245	9.15	1,596	11.74
	Aug 08	17	8	136	4	0.03	3	0.02	835	6.14	2,381	17.51
	Aug 12	16	8	128	2	0.02	0	0.00	340	2.66	1,829	14.29
	Aug 14	15	8	120	4	0.03	0	0.00	227	1.89	2,461	20.51
	Aug 19	19	6	114	2	0.02	0	0.00	138	1.21	1,689	14.82
	Aug 26	16	8	128	0	0.00	0	0.00	49	0.38	4,425	34.57
Total		23	92	1,548	1,072		3,526		37,468		14,690	
1992	Jun 25	16	8	128	1,021	7.98	930	7.27	3,916	30.59	0	0.00
	Jun 29	15	6	90	815	9.06	525	5.83	2,439	27.10	0	0.00
	Jul 6	9	8	72	310	4.31	486	6.75	2,840	39.44	0	0.00
	Aug 03	17	8	136	27	0.20	317	2.33	1,440	10.59	5,106	37.54
	Aug 06	17	6	102	11	0.11	1	0.01	536	5.25	3,832	37.57
	Aug 11	19	6	114	7	0.06	1	0.01	136	1.19	3,837	33.66
	Aug 14	21	6	126	0	0.00	1	0.01	70	0.56	8,216	65.21
	Aug 17	16	6	96	0	0.00	0	0.00	24	0.25	5,685	59.22
	Aug 20	14	6	84	1	0.01	0	0.00	43	0.51	2,682	31.93
	Aug 24	14	6	84	3	0.04	1	0.01	17	0.20	2,827	33.65
	Aug 27	11	6	66	0	0.00	0	0.00	5	0.08	1,238	18.76
	Aug 31	11	6	66	0	0.00	0	0.00	1	0.02	1,153	17.47
Total		22	78	1,164	2,195		2,262		11,467		34,576	
1993	Aug 06	15	8	120	9	0.08	2	0.02	303	2.53	6,828	56.90
	Aug 09	17	6	102	4	0.04	1	0.01	153	1.50	3,839	37.64
	Aug 14	17	6	102	3	0.03	1	0.01	70	0.69	2,681	26.28
	Aug 17	16	6	96	3	0.03	0	0.00	23	0.24	2,349	24.47
	Aug 21	17	6	102	0	0.00	0	0.00	26	0.25	3,115	30.54
	Aug 25	15	6	90	0	0.00	1	0.01	24	0.27	3,008	33.42
	Aug 28	14	6	84	1	0.01	0	0.00	11	0.13	1,798	21.40
	Sept 01	13	6	78	1	0.01	0	0.00	9	0.12	791	10.14
Total		20	50	774	21		5		619		24,409	

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Appendix B.8 (page 4 of 4)

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1994	Aug 04	14	6	84	6	0.07	0	0.00	808	9.62	4,040	48.10
	Aug 09	17	6	102	3	0.03	0	0.00	350	3.43	5,790	56.76
	Aug 12	17	8	136	0	0.00	0	0.00	226	1.66	10,539	77.49
	Aug 15	16	8	128	0	0.00	1	0.01	151	1.18	7,190	56.17
	Aug 18	15	8	120	1	0.01	0	0.00	106	0.88	2,710	22.58
	Aug 22	12	8	96	0	0.00	1	0.01	34	0.35	1,855	19.32
	Aug 25	7	8	56	0	0.00	0	0.00	12	0.21	1,492	26.64
	Aug 27	6	6	36	0	0.00	1	0.03	2	0.06	677	18.81
Total		20	58	758	10		3		1,689		34,293	
1995	Jun 26	16	4	64	1,656	25.88	535	8.36	3,628	56.69	0	0.00
	Jun 29	13	4	52	707	13.60	620	11.92	3,577	68.79	0	0.00
	Jul 03	9	4	36	284	7.89	456	12.67	2,200	61.11	0	0.00
	Jul 06	8	4	32	74	2.31	331	10.34	2,372	74.13	0	0.00
	Jul 10	6	4	24	32	1.33	293	12.21	1,874	78.08	0	0.00
	Jul 14	2	4	8	7	0.88	51	6.38	480	60.00	0	0.00
	Jul 18	6	6	36	9	0.25	44	1.22	1,638	45.50	6	0.17
	Jul 21	5	4	20	4	0.20	132	6.60	899	44.95	13	0.65
	Aug 04	6	6	36	10	0.28	4	0.11	484	13.44	1,321	36.69
	Aug 08	9	6	54	2	0.04	6	0.11	379	7.02	2,816	52.15
	Aug 12	8	6	48	5	0.10	1	0.02	79	1.65	2,643	55.06
	Aug 16	12	6	72	1	0.01	0	0.00	41	0.57	4,398	61.08
	Aug 19	5	6	30	1	0.03	0	0.00	4	0.13	1,679	55.97
	Aug 22	8	6	48	0	0.00	1	0.02	9	0.19	1,750	36.46
	Aug 26	3	6	18	0	0.00	0	0.00	0	0.00	712	39.56
	Aug 29	3	6	18	0	0.00	0	0.00	4	0.22	660	36.67
	Sept 01	1	6	6	0	0.00	0	0.00	0	0.00	194	32.33
Total		21	88	602	2,792		2,474		17,668		16,192	
1996	Jun 24	6	2	12	145	12.08	69	5.75	613	51.08	0	0.00
	Jul 2	4	2	8	175	21.88	109	13.63	376	47.00	0	0.00
	Jul 5	3	2	6	8	1.33	38	6.33	606	101.00	0	0.00
	Jul 8	4	4	16	42	2.63	92	5.75	877	54.81	0	0.00
	Jul 12	4	4	16	60	3.75	56	3.50	758	47.38	0	0.00
	Jul 16	1	4	4	5	1.25	33	8.25	336	84.00	3	0.75
	Jul 19	3	4	12	9	0.75	9	0.75	444	37.00	51	4.25
	Jul 22	2	6	12	0	0.00	6	0.50	414	34.50	234	19.50
	Jul 25	3	8	24	2	0.08	5	0.21	367	15.29	700	29.17
	Jul 29	2	6	12	1	0.08	2	0.17	98	8.17	668	55.67
	Jul 31	1	6	6	0	0.00	2	0.33	148	24.67	162	27.00
	Aug 10	2	6	12	0	0.00	0	0.00	0	0.00	787	65.58
	Aug 13	5	6	30	0	0.00	1	0.03	5	0.17	1,761	58.70
	Aug 16	2	6	12	0	0.00	0	0.00	8	0.67	590	49.17
	Aug 20	3	6	18	0	0.00	52	2.89	0	0.00	1,063	59.06
	Aug 23	2	6	12	0	0.00	0	0.00	0	0.00	620	51.67
	Aug 26	5	6	30	0	0.00	0	0.00	0	0.00	541	18.03
Total		8	84	242	447		474		5,050		7,180	
1997	Aug 12	2	6	12	1	0.08	0	0.00	23	1.92	494	41.17
	Aug 18	3	6	18	4	0.22	1	0.06	0	0.00	708	39.33
Total		4	12	30	5		1		23		1,202	
1998	Aug 06	3	6	18	3	0.17	0	0	111	6.17	313	17.39
	Aug 11	No harvest/ No deliveries										
Total		3	6	18	3		0		111		313	
1999 No commercial fishery in W-2												
2000	Aug 12	4	6	24							1237	51.54
	Aug 21	2	6	12							439	36.58
Total		12	12	36							1676	34.9

^a Gillnet mesh size unrestricted.

^b Gillnets were restricted to 6 inches or less; after 1985 this restriction was in effect for all periods.

Appendix B.9. Historical commercial salmon harvest by statistical area in District 1, 1984-2000.

Year	Statistical Area 335-11				Statistical Area 335-12				Statistical Area 335-13				Statistical Area 335-14			
	Chinook	Sockeye	Chum	Coho	Chinook	Sockeye	Chum	Coho	Chinook	Sockeye	Chum	Coho	Chinook	Sockeye	Chum	Coho
1984 ^{ab}	20,229	45,276	385,178	332,679	9,717	1,295	10,853	272,419								
1985 ^c	18,210	53,548	117,152	168,465	17,949	50,805	74,056	161,483								
1986	9,329	46,505	169,958	301,093	9,181	46,670	134,243	342,096								
1987	20,492	82,403	332,002	226,252	13,415	52,228	234,497	159,069								
1988 ^d	40,355	60,168	861,433	290,872	12,540	27,127	453,012	199,036	915	2,469	47,537	18,509				
1989	29,702	28,319	498,490	233,182	10,856	11,499	203,120	192,796	1,187	1,570	25,782	35,056				
1990 ^e	6,195	8,988	54,431	63,804	29,195	38,113	224,148	196,827	11,762	20,508	101,711	93,928	4,731	14,349	57,737	40,678
1991	4,218	16,961	63,636	98,565	23,104	50,760	165,651	217,820	5,840	19,884	92,063	117,335	3,544	17,815	72,984	52,525
1992	7,754	18,253	76,215	124,583	23,177	36,938	178,693	271,900	9,064	22,829	43,979	159,189	4,682	11,936	34,249	75,922
1993	2,198	10,054	12,272	113,956	6,302	16,821	26,712	226,119	148	116	1,912	171,208	66	12	1,822	75,047
1994	1,589	8,071	27,823	87,428	13,678	34,512	163,087	283,129	634	4,863	55,284	226,100	300	1,916	23,232	93,739
1995	4,917	19,129	111,404	63,421	12,966	27,055	257,166	175,531	8,336	29,131	153,619	164,763	1,835	14,711	66,061	51,554
1996	237	1,851	9,651	100,608	4,161	15,969	117,496	393,330	2,064	12,619	57,533	323,751	510	2,965	18,147	112,442
1997	2,257	8,072	5,279	18,232	8,063	13,845	11,010	61,671	95	59	255	26,795	21	12	459	22,903
1998	2,457	13,536	34,648	32,025	9,346	24,882	105,751	69,654	4,713	18,773	48,908	60,664	840	3,715	18,391	47,825
1999	735	6,162	3,632	1,464	3,950	10,697	7,998	19,188	15	106	96	8,944	5	11	90	5,187
2000	91	874	1,960	40,472	313	3,174	9,448	74,614	527	68	109	100,474	165	14	53	44,143

^a Prior to June 25, gillnet mesh size was unrestricted in both statistical areas; after June 25, gillnet mesh size was restricted to 6 inches or less. Commercial fishing chum season was allowed only in 335-11, both statistical areas were open during coho season.

^b Through 1987, statistical area 335-11 was located downstream of Bethel, and 335-12 was located upstream from Bethel to Mishevak Slough.

^c Since 1985, gillnets have been restricted to 6 inches or less during all commercial periods.

^d The upstream boundary of District 1 was moved upstream to Bogus Creek; the area from the old boundary to Bogus Creek was designated as stat. area 335-13.

^e Beginning in 1990, the upstream boundary of District 1 was moved downstream to Nelson Island and the district was split into four statistical areas. Statistical areas 335-11 & -12 are below Bethel, and 335-13 & -14 are above Bethel.

Appendix B 10. Historical commercial salmon harvest and effort by fishing period in Kuskokwim
Statistical Area 335-11.

Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
1990	Jun 20	134	6	2,580	2,021	5,353		
	Jun 25	102	6	1,453	2,719	6,986		
	Jun 29	92	6	694	975	5,116		
	Jul 05	66	6	518	1,509	11,354		
	Jul 09	91	6	455	721	12,405	5	
	Jul 14	93	8	254	868	11,053	17	43
	Aug 01	98	6	36	50	1,166	330	3,653
	Aug 06	106	6	170	34	599	193	20,588
	Aug 10	123	6	22	27	244	73	11,089
	Aug 13	95	6	6	27	67	26	16,094
	Aug 16	100	9	6	14	60	28	7,243
	Aug 20	70	6	0	15	27	18	3,259
	Aug 27	35	6	1	8	1	12	1,835
Total		743	83	6,195	8,988	54,431	702	63,804
1991	Jun 20	88	6	1,392	2,619	3,340		
	Jun 24	86	6	1,633	4,867	9,865		
	Jul 01	94	6	576	5,572	10,195		
	Jul 06	102	6	264	2,387	6,031		
	Jul 13	84	6	150	894	11,289	12	4
	Jul 18	89	6	66	396	7,990	0	218
	Jul 22	65	6	30	46	3,973	0	310
	Jul 25	69	8	40	51	4,012	66	1,543
	Jul 29	91	8	12	40	4,050	19	7,661
	Aug 01	126	6	12	24	957	16	11,091
	Aug 05	149	8	11	19	927	19	12,868
	Aug 08	147	8	10	13	562	14	24,661
	Aug 12	150	8	7	13	278	34	16,355
	Aug 14	107	8	6	10	139	13	14,426
	Aug 19	82	6	7	4	21	1	6,422
	Aug 26	68	8	2	6	7	0	3,006
Total		252	110	4,218	16,961	63,636	194	98,565
1992	Jun 18	130	8	2,449	3,388	9,256		
	Jun 22	146	8	2,389	5,669	17,363		
	Jun 25	135	8	1,109	3,430	11,135	5	
	Jun 29	109	6	981	4,040	16,734	0	
	Jul 06	96	8	640	1,559	20,850	540	
	Aug 03	146	8	81	32	492	2,098	26,666
	Aug 06	124	6	21	30	243	219	20,674
	Aug 11	151	6	26	35	57	15	25,099
	Aug 14	130	6	23	28	48	26	17,348
	Aug 17	116	6	15	19	19	6	10,943
	Aug 20	104	6	6	5	2	0	10,691
	Aug 24	93	6	5	12	6	0	5,147
	Aug 27	66	6	6	3	6	0	6,072
	Aug 31	57	6	3	3	4	0	1,943
Total		271	94	7,754	18,253	76,215	2,909	124,583

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Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
1993	Jun 25	183	8	2,073	9,803	10,844		
	Jul 31	150	6	44	78	867		11,538
	Aug 04	163	6	10	32	264		16,044
	Aug 06	119	8	21	43	120		16,922
	Aug 09	112	6	13	32	41		10,192
	Aug 14	163	6	18	22	67	5	27,176
	Aug 17	130	6	9	17	38	0	19,712
	Aug 21	125	6	2	5	6	0	5,531
	Aug 25	83	6	3	9	12	0	2,932
	Aug 28	71	6	5	13	12	2	3,265
	Sept 01	24	6	0	0	1	0	644
Total		278	70	2,198	10,054	12,272	7	113,956
1994	Jun 24	116	8	1,306	6,720	13,224		
	Jul 14	67	4	82	493	4,691	581	382
	Jul 19	85	6	64	270	4,428	1,193	1,279
	Jul 23	80	6	38	274	1,927	1,211	3,109
	Jul 26	109	6	31	183	1,994	2,276	5,314
	Jul 29	105	6	24	47	941	1,294	7,498
	Aug 04	120	6	15	27	378	972	10,214
	Aug 09	67	6	6	4	44	166	9,080
	Aug 12	113	8	11	16	74	101	13,019
	Aug 15	109	8	5	18	74	187	12,159
	Aug 18	96	8	1	8	24	55	7,944
	Aug 22	88	8	4	8	13	56	9,971
	Aug 25	54	8	0	2	3	20	2,850
	Aug 27	62	6	1	0	2	6	2,709
	Aug 30	45	6	1	0	6	13	1,422
	Sept 02	20	6	0	1	0	0	478
Total		231	106	1,589	8,071	27,823	8,131	87,428
1995	Jun 22	120	4	1,794	1,225	8,912		
	Jun 26	117	4	1,242	4,950	16,819		
	Jun 29	124	4	752	4,383	18,410		
	Jul 03	117	4	453	3,199	17,751		
	Jul 06	103	4	238	1,530	15,670		
	Jul 10	96	4	111	927	14,650	1	
	Jul 14	95	4	153	1,574	7,637	0	62
	Jul 18	83	6	68	455	8,539	0	170
	Jul 21	55	4	33	130	2,642	0	443
	Aug 04	88	6	21	77	82	3	10,613
	Aug 08	120	6	10	87	94	3	10,166
	Aug 12	115	6	7	269	106	2	14,836
	Aug 16	91	6	7	67	16	6	6,867
	Aug 19	100	6	7	55	22	1	6,886
	Aug 22	89	6	7	76	22	1	7,332
	Aug 26	85	6	11	77	19	6	3,905
	Aug 29	43	6	3	26	10	1	1,269
	Sept 01	23	6	0	22	3	0	872
Total		260	92	4,917	19,129	111,404	24	63,421

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Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
1996	Jun 17	No Tenders / No Deliveries						
	Jun 20	1	2	4	90	120		0
	Jun 24	No Tenders / No Deliveries						
	Jul 02	10	2	39	160	958		0
	Jul 05	20	2	37	481	1,432		0
	Jul 08	17	2	24	353	932		1
	Jul 12	15	2	12	133	1,937		200
	Jul 16	6	2	4	35	115		142
	Jul 19	27	3	11	39	843		1,959
	Jul 22	71	6	20	185	1,771		12,764
	Jul 25	90	8	22	74	406	118	7,838
	Jul 29	78	6	19	75	900	125	14,135
	Jul 31	35	6	4	9	63	0	5,886
	Aug 03	124	6	10	67	89	1	18,114
	Aug 07	116	6	9	27	38	0	15,346
	Aug 10	64	6	6	7	7	0	6,166
	Aug 13	65	6	2	27	20	0	5,003
	Aug 16	95	6	6	42	8	0	6,261
	Aug 20	77	6	4	41	8	0	3,589
	Aug 23	63	6	3	6	4	0	2,664
	Aug 26	15	6	1	0	0	0	540
Total		241	89	237	1,851	9,651	244	100,608
1997	Jun 23	81	6	2,171	7,745	4,540		
	Jul 31	108	6	44	118	559		4,460
	Aug 06	92	6	29	126	120		4,350
	Aug 12	73	6	5	40	36		4,095
	Aug 18	65	6	8	43	24		5,327
Total		158	30	2,257	8,072	5,279	0	18,232
1998	Jun 24	85	6	1,168	3,286	6,721		
	Jun 29	88	6	548	6,389	15,518		
	Jul 03	72	4	270	2,194	6,113		
	Jul 11	55	4	211	685	3,542		10
	Jul 22	51	6	117	395	801		561
	Jul 27	97	6	71	425	1,331		4,647
	Aug 01	104	6	37	67	490	6	6,221
	Aug 06	84	6	15	42	56	3	6,970
	Aug 11	86	6	14	32	57	8	8,562
	Aug 17	60	6	0	12	6	8	2,063
	Aug 22	51	6	5	5	7	9	2,256
	Aug 29	22	6	1	4	6	7	735
Total		215	68	2,457	13,536	34,648	41	32,025
1999	Jun 30	83	6	733	6,122			
	Aug 07	58	6	2	40	3,623		1,464
Total		100	12	735	6,162	3,623	0	1,464

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Appendix B.10. (page 4 of 4)

Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
2000	Jul 07	44	4	77	623	1,800	0	0
	Aug 01	66	4	5	49	31	0	9,523
	Aug 05	75	6	0	56	7	0	8,129
	Aug 09	96	6	3	39	101	0	9,416
	Aug 14	51	6	2	49	14	0	5,577
	Aug 18	97	6	3	32	6	0	5,888
	Aug 22	104	6	1	25	1	6	1,658
	Aug 25	84	6	0	1	0	3	216
Total		149	44	91	874	1,960	9	22,755

Appendix B.11. Historical commercial salmon harvest and effort by fishing period in Kuskokwim
Statistical Area 335-12.

Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
1990	Jun 20	496	6	14,110	8,297	24,953	0	0
	Jun 25	341	6	7,342	13,289	32,077	0	0
	Jun 29	337	6	3,815	7,660	35,828	0	0
	Jul 05	316	6	1,589	3,954	40,720	2	0
	Jul 09	294	6	1,201	3,172	43,347	4	0
	Jul 14	313	8	864	1,471	40,580	10	15
	Aug 01	337	6	129	130	3,663	1,058	14,536
	Aug 06	350	6	71	68	1,979	611	28,431
	Aug 10	301	6	40	32	612	184	17,860
	Aug 13	322	6	16	15	260	68	83,038
	Aug 16	293	9	8	12	77	51	21,734
	Aug 20	284	6	8	11	44	17	25,003
	Aug 27	253	6	2	2	8	5	6,210
Total		649	83	29,195	38,113	224,148	2,010	196,827
1991	Jun 20	513	6	12,421	17,113	9,926	0	0
	Jun 24	340	6	6,117	9,162	13,431	0	0
	Jul 01	351	6	2,926	11,040	27,070	0	0
	Jul 06	274	6	745	8,972	17,671	1	0
	Jul 13	291	6	412	2,198	20,744	9	12
	Jul 18	250	6	135	1,612	32,764	9	531
	Jul 22	231	6	57	302	13,985	17	1,065
	Jul 25	241	8	68	166	10,015	18	1,988
	Jul 29	277	8	68	78	10,749	14	22,819
	Aug 01	294	6	93	35	4,874	11	14,836
	Aug 05	277	8	16	32	2,075	6	21,918
	Aug 08	268	8	9	15	1,284	8	25,824
	Aug 12	294	8	16	13	654	4	61,098
	Aug 14	275	8	7	7	260	2	22,589
	Aug 19	272	6	10	10	98	2	25,540
	Aug 26	233	8	4	5	51	2	19,600
Total		596	110	23,104	50,760	165,651	103	217,820
1992	Jun 18	437	8	7,307	5,120	23,439	0	0
	Jun 22	313	8	7,160	9,668	42,391	14	0
	Jun 25	288	8	3,537	8,323	26,332	1	0
	Jun 29	291	6	3,645	10,957	45,137	38	0
	Jul 06	294	8	1,192	2,677	38,783	151	1
	Aug 03	292	8	125	75	1,578	2,670	29,341
	Aug 06	271	6	54	23	522	249	24,520
	Aug 11	296	6	64	25	299	0	81,586
	Aug 14	274	6	27	24	98	0	31,051
	Aug 17	280	6	25	29	62	0	42,555
	Aug 20	267	6	14	9	30	0	35,619
	Aug 24	248	6	12	4	6	0	9,522
	Aug 27	223	6	14	2	11	1	13,262
	Aug 31	154	6	1	2	5	0	4,443
Total		566	94	23,177	36,936	178,693	3,124	271,900

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Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
1993	Jun 25	441	8	6,111	16,560	23,279	0	0
	Jul 31	286	6	59	60	1,558	11	25,420
	Aug 04	258	6	41	93	929	6	53,888
	Aug 06	279	8	31	28	535	9	37,491
	Aug 09	308	6	30	38	203	2	23,634
	Aug 14	287	6	16	12	115	6	34,600
	Aug 17	242	6	6	7	39	5	25,986
	Aug 21	244	6	3	14	30	1	13,822
	Aug 25	148	6	1	3	4	0	2,420
	Aug 28	128	6	3	5	11	0	3,406
	Sept 01	96	6	1	1	9	3	5,452
Total		566	70	6,302	16,821	26,712	43	226,119
1994	Jun 24	449	8	12,915	32,238	73,990	0	0
	Jul 14	270	4	253	1,186	21,138	608	280
	Jul 19	246	6	107	566	30,904	1,398	2,553
	Jul 23	244	6	114	184	21,471	2,828	11,974
	Jul 26	265	6	86	119	8,168	3,449	17,595
	Jul 29	279	6	114	72	4,358	3,681	27,548
	Aug 04	299	6	40	39	1,716	2,148	26,966
	Aug 09	263	6	8	58	627	751	58,112
	Aug 12	264	8	12	20	287	224	44,381
	Aug 15	270	8	9	8	168	183	15,883
	Aug 18	262	8	11	5	122	129	31,199
	Aug 22	256	8	4	6	61	112	15,696
	Aug 25	214	8	4	4	47	65	16,031
	Aug 27	182	6	0	4	17	21	6,130
	Aug 30	218	6	1	2	10	8	6,770
	Sept 02	137	6	0	1	3	7	2,011
Total		583	106	13,678	34,512	163,087	15,612	283,129
1995	Jun 22	449	4	5,101	3,195	40,245	0	0
	Jun 26	270	4	4,196	5,882	38,893	0	0
	Jun 29	257	4	1,865	6,668	45,700	0	0
	Jul 03	152	4	637	3,324	30,563	2	0
	Jul 06	196	4	439	4,866	33,073	0	0
	Jul 10	188	4	267	1,447	30,094	1	15
	Jul 14	203	4	195	786	18,045	3	112
	Jul 18	109	6	105	457	11,341	7	236
	Jul 21	171	4	56	173	7,988	5	436
	Aug 04	59	6	14	18	259	0	14,545
	Aug 08	265	6	35	66	473	5	41,623
	Aug 12	280	6	14	58	202	5	48,136
	Aug 16	251	6	14	23	76	5	18,086
	Aug 19	242	6	11	20	61	5	16,437
	Aug 22	213	6	2	21	83	5	17,312
	Aug 26	191	6	9	30	48	4	9,299
	Aug 29	152	6	5	14	15	6	8,186
	Sept 01	79	6	1	7	7	3	1,108
Total		561	92	12,966	27,055	257,166	56	175,531

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Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
1996	Jun 17	245	2	2,045	1,850	11,560	0	0
	Jun 20	185	2	1,014	4,205	18,678	0	0
	Jun 24	129	1.5	248	1,762	10,233	0	0
	Jul 02	122	2	259	2,058	9,868	0	0
	Jul 05	86	2	85	882	8,460	0	1
	Jul 08	102	2	63	2,800	11,366	0	14
	Jul 12	127	2	103	1,555	15,561	0	1,018
	Jul 16	122	2	46	248	9,278	0	3,214
	Jul 19	141	3	61	132	6,491	0	7,046
	Jul 22	207	6	56	97	7,807	165	23,722
	Jul 25	254	8	44	76	4,720	140	61,435
	Jul 29	247	6	35	66	1,474	329	68,635
	Jul 31	250	6	24	49	834	212	52,739
	Aug 03	212	6	18	37	336	23	44,710
	Aug 07	195	6	19	27	319	34	36,850
	Aug 10	240	6	16	34	198	32	28,714
	Aug 13	224	6	13	33	144	21	30,841
	Aug 16	196	6	3	24	131	3	20,779
	Aug 20	150	6	7	19	22	2	7,242
	Aug 23	104	6	1	9	9	5	3,960
	Aug 26	72	6	1	6	7	0	2,410
Total		486	93	4,161	15,969	117,496	966	393,330
1997	Jun 23	274	6	7,852	13,473	8,550	0	0
	Jul 31	322	6	97	234	1,501	0	10,503
	Aug 06	280	6	62	80	662	2	15,689
	Aug 12	261	6	33	40	269	0	28,857
	Aug 18	234	6	19	18	28	0	6,622
Total		449	30	8,063	13,845	11,010	2	61,671
1998	Jun 24	253	6	5,245	5,757	25,746	0	0
	Jun 29	151	6	2,118	6,060	24,617	0	0
	Jul 03	230	4	971	6,958	28,029	0	1
	Jul 11	235	4	549	5,356	16,917	0	8
	Jul 22	165	6	184	355	5,510	0	1,822
	Jul 27	176	6	133	229	3,239	0	9,459
	Aug 01	208	6	80	76	1,172	9	14,304
	Aug 06	212	6	24	31	324	3	11,901
	Aug 11	196	6	28	32	151	6	19,207
	Aug 17	150	6	10	11	26	1	7,056
	Aug 22	123	6	4	16	19	3	5,131
	Aug 29	48	6	0	1	1	0	765
Total		423	68	9,346	24,882	105,751	22	69,654
1999	Jun 30	326	6	3,935	10,650	19,088	0	
	Aug 07	177	6	15	47	100	0	7,998
Total		366	12	3,950	10,697	19,188	0	7,998

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Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
2000	Jul 07	180	4	280	3,035	9,226	0	417
	Aug 01	182	4	7	45	125	4	16,101
	Aug 05	196	6	8	17	36	1	23,864
	Aug 09	122	6	10	18	27	0	11,487
	Aug 14	154	6	4	26	19	1	11,189
	Aug 18	134	6	3	26	10	0	8,809
	Aug 22	92	6	0	7	3	0	2,831
	Aug 25	23	6	1	0	2	0	333
Total		320	44	313	3,174	9,448	6	34,649

Appendix B.12. Historical commercial salmon harvest and effort by fishing period in Kuskokwim
Statistical Area 335-13.

Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
1990	Jun 20	No commercial opening						
	Jun 25	126	6	5,152	7,408	10,387		
	Jun 29	153	6	3,477	6,016	20,099		
	Jul 05	153	6	1,305	2,580	23,669	1	
	Jul 09	167	6	903	2,845	24,575	2	
	Jul 14	171	8	769	1,547	19,037	5	12
	Aug 01	119	6	53	77	1,984	182	3,736
	Aug 06	125	6	52	10	1,293	166	8,923
	Aug 10	171	6	26	5	348	74	18,171
	Aug 13	170	6	14	5	173	16	12,956
	Aug 16	201	9	9	2	96	34	27,544
	Aug 20	181	6	2	7	37	2	17,669
	Aug 27	185	6		6	13	4	4,917
Total		328	77	11,762	20,508	101,711	486	93,928
1991	Jun 20	No commercial opening						
	Jun 24	123	6	3,101	2,724	3,522		
	Jul 01	124	6	1,535	4,535	6,816		
	Jul 06	141	6	597	7,017	8,479		
	Jul 13	126	6	221	1,604	10,841		
	Jul 18	151	6	177	2,143	24,301		198
	Jul 22	174	6	75	1,391	17,267	2	984
	Jul 25	146	8	43	282	9,149		903
	Jul 29	109	8	37	129	5,042		4,849
	Aug 01	128	6	14	33	3,903	2	8,114
	Aug 05	142	8	15	6	1,369		12,005
	Aug 08	154	8	9	7	780	2	16,259
	Aug 12	158	8	9	1	335	1	26,481
	Aug 14	157	8	4	5	117		14,882
	Aug 19	172	6	3	6	112	1	17,678
	Aug 26	153	8		1	30		14,982
Total		320	104	5,840	19,884	92,063	8	117,335
1992	Jun 18	No commercial opening						
	Jun 22	106	8	3,297	5,761	6,634		
	Jun 25	143	8	2,858	6,679	9,439		
	Jun 29	149	6	1,948	8,065	12,160	1	
	Jul 06	141	8	777	2,240	14,408	28	1
	Aug 03	128	8	56	18	676	859	13,315
	Aug 06	138	6	27	38	315	36	8,729
	Aug 11	174	6	58	14	224	3	56,448
	Aug 14	168	6	11	3	46		25,578
	Aug 17	143	6	6	1	31		18,169
	Aug 20	149	6	12	3	20		17,900
	Aug 24	144	6	7	3	9		7,102
	Aug 27	138	6	4	1	9		6,284
	Aug 31	117	6	3	3	8		5,663
Total		276	86	9,064	22,829	43,979	927	159,189

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Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
1993	Jun 25	No commercial opening						
	Jul 31	146	6	50	66	950	6	13,815
	Aug 04	186	6	27	13	445	3	51,261
	Aug 06	185	8	27	12	296		27,064
	Aug 09	158	6	18	4	73	1	12,821
	Aug 14	141	6	6	5	69		10,512
	Aug 17	192	6	11	7	38	1	26,249
	Aug 21	150	6	3	5	20		16,709
	Aug 25	146	6	0	1	8		3,237
	Aug 28	148	6	4	1	5		5,061
	Sept 01	116	6	2	2	8		4,479
Total		306	62	148	116	1,912	11	171,208
1994	Jun 24	No commercial opening						
	Jul 14	128	4	163	1,454	11,546	88	79
	Jul 19	138	6	153	2,764	18,368	894	2,625
	Jul 23	148	6	127	507	11,053	1,465	7,978
	Jul 26	142	6	91	62	8,268	1,346	13,847
	Jul 29	148	6	41	32	4,337	789	12,660
	Aug 04	147	6	28	20	1,185	543	26,272
	Aug 09	159	6	6	6	208	249	40,824
	Aug 12	187	8	7	6	202	113	40,117
	Aug 15	169	8	5	7	45	32	14,199
	Aug 18	186	8	6	3	37	50	31,410
	Aug 22	163	8	2	1	18	19	10,675
	Aug 25	156	8	3	1	9	24	15,199
	Aug 27	167	6	2	0	8	12	10,215
Total		327	86	634	4,863	55,284	5,624	226,100
1995	Jun 22	No commercial opening						
	Jun 26	193	4	3,970	8,526	36,766		
	Jun 29	151	4	1,848	5,351	14,574		
	Jul 03	153	4	1,103	6,341	26,526		
	Jul 06	140	4	596	5,499	21,883		
	Jul 10	163	4	371	1,975	27,758		6
	Jul 14	87	4	126	552	9,049	2	42
	Jul 18	96	6	114	358	8,770	2	206
	Jul 21	100	4	88	217	6,679	1	307
	Aug 04	82	6	26	28	605	2	22,165
	Aug 08	194	6	40	181	393		36,567
	Aug 12	184	6	19	22	451	1	29,290
	Aug 16	199	6	17	50	74	1	29,628
	Aug 19	160	6	5	8	34	2	12,069
	Aug 22	148	6	4	9	35	1	15,120
	Aug 26	149	6	3	9	14		10,316
	Aug 29	120	6	5	3	6	1	6,154
	Sept 01	102	6	1	2	2		2,893
Total		331	88	8,336	29,131	153,619	13	164,763

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Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
1996	Jun 17	No commercial opening						
	Jun 20	81	2	856	1,817	7,292		
	Jun 24	97	1.5	330	2,284	7,581		
	Jul 02	75	2	189	1,358	8,239		
	Jul 05	74	2	141	1,642	5,648		1
	Jul 08	75	2	76	3,181	4,362		6
	Jul 12	75	2	83	1,391	6,748		311
	Jul 16	58	2	27	231	3,860		1,031
	Jul 19	78	3	64	64	3,796		4,093
	Jul 22	125	6	94	311	4,246	71	12,283
	Jul 25	135	8	40	73	2,742	99	34,446
	Jul 29	185	6	40	43	925	126	52,950
	Jul 31	139	6	18	30	543	51	43,749
	Aug 03	163	6	28	25	600	19	49,738
	Aug 07	177	6	13	17	185	13	31,440
	Aug 10	168	6	22	14	571	7	37,493
	Aug 13	123	6	8	19	97	6	20,904
	Aug 16	178	6	17	76	65	1	18,405
	Aug 20	112	6	5	19	17	10	8,615
	Aug 23	84	6	4	7	10	5	3,770
	Aug 26	101	6	9	17	6	3	4,516
Total		309	90.5	2,064	12,619	57,533	411	323,751
1997	Jun 23	No commercial opening						
	Aug 06	105	6	37	17	201		8,856
	Aug 12	132	6	17	38	49		13,518
	Aug 18	116	6	39	4	5		4,421
Total		180	18	93	59	255	0	26,795
1998	Jun 23	No commercial opening						
	Jun 29	181	6	3,288	9,084	23,601		
	Jul 03	117	4	842	5,376	13,388		
	Jul 11	104	4	318	3,443	6,059		4
	Jul 22	72	6	75	521	3,756	4	567
	Jul 27	52	6	84	43	1,186	11	2,805
	Aug 01	69	6	18	35	417	4	2,379
	Aug 06	143	6	43	214	308	4	16,759
	Aug 11	119	6	20	19	93	2	15,426
	Aug 17	160	6	19	14	67	2	15,155
	Aug 22	143	6	6	22	30	2	6,063
	Aug 29	60	6	0	2	3	0	1,506
Total		316	62	4,713	18,773	48,908	29	60,664
1999	Jun 30	No commercial opening						
	Aug 07	105	6	15	106	96	2	8,944
Total		105	6	15	106	96	2	8,944

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Appendix B.12. (page 4 of 4)

Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
2000	Jul 07	No commercial opening						
	Aug 04	87	6	6	6	36		37,362
	Aug 08	154	6	6	24	40	1	18,656
	Aug 12	144	6	10	16	15		26,362
	Aug 17	133	6	5	17	11		10,207
	Aug 21	110	6	2	3	6		5,681
	Aug 25	74	6	2	2	1		2,206
Total		201	36	31	68	109	1	100,474

Appendix B.13. Historical commercial salmon harvest and effort by fishing period in Kuskokwim
Statistical Area 335-14.

Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
1990	Jun 20	No commercial opening						
	Jun 25	54	6	2,084	3,608	9,494		
	Jun 29	69	6	1,442	4,123	13,868		
	Jul 05	59	6	659	2,716	11,092		
	Jul 09	45	6	245	2,019	11,084		
	Jul 14	52	8	240	1,581	9,133		
	Aug 01	29	6	34	276	2,252	16	1,624
	Aug 06	50	6	13	21	726	6	3,508
	Aug 10	61	6	6	2	65	4	11,131
	Aug 13	56	6	2	1	9	1	3,356
	Aug 16	61	9	5	1	6	0	12,084
	Aug 20	61	6	1	1	5	1	5,907
	Aug 27	63	6	0	0	3	0	3,068
Total		143	77	4,731	14,349	57,737	28	40,678
1991	Jun 20	No commercial opening						
	Jun 24	71	6	1,761	2,509	3,814		
	Jul 01	63	6	929	3,281	6,040		
	Jul 06	72	6	496	5,843	7,879		
	Jul 13	72	6	121	1,762	9,678		
	Jul 18	78	6	74	977	13,742		30
	Jul 22	74	6	71	1,346	14,563		296
	Jul 25	77	8	35	1,027	6,907	2	437
	Jul 29	59	8	17	485	4,185	16	1,812
	Aug 01	56	6	6	532	3,364	1	4,243
	Aug 05	75	8	14	39	1,720	7	9,471
	Aug 08	65	8	5	5	568	0	5,293
	Aug 12	64	8	10	4	319	1	10,647
	Aug 14	63	8	1	1	118	0	6,496
	Aug 19	64	6	4	4	82	0	7,724
	Aug 26	60	8	0	0	5	0	6,076
Total		170	104	3,544	17,815	72,984	27	52,525
1992	Jun 18	No commercial opening						
	Jun 22	58	8	1,732	3,919	8,041		
	Jun 25	72	8	1,480	3,490	8,208		
	Jun 29	59	6	749	3,020	6,182		
	Jul 06	60	8	641	1,486	10,155		
	Aug 03	54	8	44	12	1,323	486	8,911
	Aug 06	57	6	14	7	239	0	3,583
	Aug 11	59	6	9	2	84	0	18,772
	Aug 14	63	6	2	0	4	0	13,982
	Aug 17	57	6	1	0	10	0	7,690
	Aug 20	59	6	4	0	1	0	9,153
	Aug 24	65	6	3	0	2	0	6,298
	Aug 27	54	6	2	0	0	0	2,620
	Aug 31	46	6	1	0	0	0	4,913
Total		116	86	4,682	11,936	34,249	486	75,922

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Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
1993	Jun 25	No commercial opening						
	Jul 31	46	6	19	6	758		5,334
	Aug 04	60	6	20	3	442		16,456
	Aug 06	57	8	9	1	445	1	9,923
	Aug 09	50	6	4	1	129	1	8,170
	Aug 14	55	6	6	0	36	0	7,938
	Aug 17	58	6	4	0	4	1	10,749
	Aug 21	74	6	1	1	2	0	11,035
	Aug 25	65	6	2	0	4	0	1,967
	Aug 28	40	6	0	0	2	0	1,860
	Sept 01	38	6	1	0	0	0	1,615
Total		100	62	66	12	1,822	3	75,047
1994	Jun 24	No commercial opening						
	Jul 14	53	4	80	758	6,210	154	79
	Jul 19	35	6	117	875	6,404	230	570
	Jul 23	35	6	34	160	3,698	341	1,152
	Jul 26	37	6	17	107	4,030	343	3,145
	Jul 29	45	6	25	8	1,616	146	4,384
	Aug 04	42	6	5	1	704	172	12,062
	Aug 09	68	6	9	2	274	56	21,554
	Aug 12	61	8	4	5	214	59	20,236
	Aug 15	50	8	3	0	34	10	5,661
	Aug 18	59	8	2	0	29	31	12,197
	Aug 22	50	8	2	0	12	14	7,712
	Aug 25	33	8	2	0	4	3	3,515
	Aug 27	35	6	0	0	3	4	1,472
Total		120	86	300	1,916	23,232	1,563	93,739
1995	Jun 22	No commercial opening						
	Jun 26	4	4	63	91	674		
	Jun 29	33	4	488	1,786	4,896		
	Jul 03	55	4	654	4,214	14,587		
	Jul 06	45	4	248	2,870	10,620		
	Jul 10	48	4	157	2,751	13,866		
	Jul 14	50	4	72	1,307	8,406		5
	Jul 18	50	6	79	1,212	8,644		59
	Jul 21	42	4	25	420	3,730		86
	Aug 04	6	6	3	0	126		1,342
	Aug 08	36	6	10	29	269		10,192
	Aug 12	43	6	10	10	140		10,159
	Aug 16	52	6	14	7	42		11,132
	Aug 19	55	6	5	4	16		5,665
	Aug 22	47	6	3	7	17		4,214
	Aug 26	52	6	2	1	20		5,609
	Aug 29	40	6	2	2	8		2,181
	Sept 01	15	6	0	0	0		910
Total		97	88	1,835	14,711	66,061	0	51,554

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Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
1996	Jun 17	No commercial opening						
	Jun 20	16	2	172	311	1,352		
	Jun 24	14	1.5	88	374	1,624		
	Jul 02	17	2	58	386	1,850		
	Jul 05	14	2	53	476	2,111		
	Jul 08	17	2	15	461	2,141		3
	Jul 12	20	2	32	702	2,222		79
	Jul 16	12	2	10	88	1,939		288
	Jul 19	21	3	28	63	2,260		1,648
	Jul 22	14	6	13	46	680		1,674
	Jul 25	18	8	18	33	1,156		9,918
	Jul 29	23	6	3	2	529		9,053
	Jul 31	51	6	6	4	101		20,572
	Aug 03	52	6	3	0	72		19,978
	Aug 07	31	6	2	2	39		10,696
	Aug 10	31	6	1	5	21		11,280
	Aug 13	59	6	2	3	35		13,305
	Aug 16	23	6	2	5	11		3,567
	Aug 20	62	6	3	4	4		6,424
	Aug 23	42	6	1	0	0		2,739
	Aug 26	21	6	0	0	0		1,218
Total		117	90.5	510	2,965	18,147	0	112,442
1997	Jun 23	No commercial opening						
	Jun 31	No commercial opening						
	Aug 06	37	6	17	6	404		8,321
	Aug 12	46	6	4	4	54		9,679
	Aug 18	60	6	0	2	1		4,903
Total		79	18	21	12	459	0	22,903
1998	Jun 24	No commercial opening						
	Jun 29	18	6	404	973	3,053		
	Jul 3	27	4	194	1,457	3,941		
	Jul 11	24	4	49	688	2,889		1
	Jul 22	60	6	84	267	5,596		683
	Jul 27	47	6	68	235	1,744		1,586
	Aug 1	44	6	21	57	708		3,887
	Aug 6	57	6	6	8	332		9,498
	Aug 11	64	6	5	12	87		15,231
	Aug 17	70	6	5	8	23		10,366
	Aug 22	65	6	4	10	11		5,486
	Aug 29	24	6	0	0	7		1,087
Total		136	62	840	3,715	18,391	0	47,825
1999	Jun 30	No commercial opening						
	Aug 7	49	6	5	11	571		5,187
Total		49	6	5	11	571	0	5187

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Year	Date	Number of Permits	Hours Fished	Chinook Salmon	Sockeye Salmon	Chum Salmon	Pink Salmon	Coho Salmon
2000	Jul 7	No commercial opening						
	Aug 4	38	6	1	1	17		12,898
	Aug 8	32	6	3	2	15	1	8,115
	Aug 12	46	6	2	1	8		11,089
	Aug 17	60	6	0	6	4		7,709
	Aug 21	48	6	2	0	4		2,896
	Aug 25	33	6	1	4	5		1,436
Total		87	36	9	14	53	1	44,143

Appendix B.14. Estimated historical daily fish passage at George River weir.

Date	Chinook					Chum					Coho					Longnose Suckers				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
6/09		2		0 *			0		0 *			0		0 *			401			
6/10		0		0 *			0		0 *			0		0 *			260			
6/11		2		0 *			0		0 *			0		0 *			221			
6/12		1		0 *			0		0 *			0		0 *			145			
6/13		0		0 *			0		0 *			0		0 *			366			
6/14		6		0 *			0		0 *			0		0 *			326			
6/15		26		0 *			0		0 *			0		0 *			430			
6/16		0		0 *			1		0 *			0		0 *			262			
6/17		11		9 *	0		2		0 *	0		0		0 *	0		68			45
6/18		8		5 *	0		0		0 *	0		0		0 *	0		223			348
6/19		42		5 *	0		2		0 *	0		0		0 *	0		100			34
6/20		0		14 *	0		0		0 *	0		0		0 *	0		0			73
6/21	27	17		9 *	0	65	0		0 *	5	0	0		0 *	0	519	276			238
6/22	17	18	1	33 *	2	613	3	1	0 *	6	0	0	0	0 *	0	832	70	2		343
6/23	269	362	3	12 *	10	1,314	35	0	0 *	38	0	0	0	0 *	0	703	204	46		927
6/24	762	488	4	5 *	11	692	52	6	22 *	17	0	0	0	0 *	0	238	72	218		686
6/25	214	907	14	38 *	5	49	41	23	8 *	17	0	0	0	0 *	0	285	120	106		1,204
6/26	41	288	44	12 *	1	376	49	162	22 *	1	0	0	0	0 *	0	62	162	688		130
6/27	183	514	35	31 *	120	508	79	116	30 *	90	0	0	0	0 *	0	296	285	921		262
6/28	98	397	170	62 *	0	167	34	289	81 *	0	0	0	0	0 *	0	2	366	987		6
6/29	91	566	126	33 *	8	191	178	288	81 *	4	0	0	0	0 *	0	1	336	877		8
6/30	84	767	164	36 *	8	215	204	399	70 *	12	0	0	0	0 *	0	0	245	1,102		0
7/01	1,034	456	288	33 *	63	498	64	634	109 *	108	0	0	0	0 *	0	1	491	472		8
7/02	712	277	397	31 *	416	730	85	388	103 *	273	0	0	0	0 *	0	15	215	115		9
7/03	389	584	428	50 *	115	961	267	557	121 *	128	0	0	0	0 *	0	29	405	330		395
7/04	320	347	287	95 *	69	1,074	83	605	132 *	77	0	0	0	0 *	0	0	305	119		324
7/05	280	221	245	188 *	48	326	174	960	113 *	72	0	0	0	0 *	0	25	205	195		965
7/06	579	294	203	280 *	51	606	111	439	169 *	218	0	0	0	0 *	0	43	176	101		24
7/07	180	93	33	128 *	231	575	52	123	206 *	162	0	0	0	0 *	0	19	73	16		400
7/08	122	34		68 *	137	629	49		190 *	47	0	0		0 *	0	2	301			12
7/09	436	37		206 *	81	852	40		389 *	40	0	0		0 *	0	149	4			107
7/10	127	29		185 *	15	241	62		470 *	58	0	0		0 *	0	2	79			13
7/11	376	33		21 *	495	446	45		485 *	436	0	0		0 *	0	6	6			261
7/12	53	245		58 *	116	343	237		500 *	161	0	0		0 *	0	1	109			576
7/13	60	31		260 *	10	394	7		337 *	91	0	0		0 *	0	3	24			184
7/14	127	11		456	22	489	12		182	41	0	0		0	0	0	31		54	0
7/15	324	65		43	17	556	158		194	22	0	0		0	0	21	2		42	66
7/16	78	6		196	146	232	51		333	150	1	0		0	0	15	0		25	1
7/17	67	22		61	104	462	236		327	88	0	0		0	0	15	39		20	0

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Appendix B.14. (2 of 3)

Date	Chinook					Chum					Coho					Longnose Suckers				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
7/18	107	42		161	13	514	207		394	55	0	0		0	0	15	1		9	0
7/19	63	87		203	219	667	575		768	144	1	0		0	0	0	10		14	2
7/20	49	111		159	9	322	300		709	18	3	2		0	0	8	420		18	1
7/21	58	83		37	13	387	342		316	41	0	1		0	0	146	76		4	2
7/22	26	49		58	41	273	144		379	87	0	2		0	1	102	25		4	2
7/23	29	32		61	87	321	292		465	172	6	0		0	2	0	72		3	4
7/24	54	7		161	22	525	207		533	116	22	2		0	0	0	5		0	1
7/25	34	41		203	25	449	238		443	76	47	2		0	0	0	21		2	7
7/26	17	18		159	34	508	110		353	56	93	1		0	5	0	0		3	6
7/27		9		37	43		42		195	47		2		0	4		0		2	4
7/28		25		58	10		176		292	34		3		1	0		6		0	0
7/29		7		47	11		96		148	28		2		0	0		4		0	0
7/30		13	18	19	5		71	546	65	26		3	7	0	0		6	8	0	0
7/31		13	14	24	26		133	367	286	63		8	8	0	9		17	4	0	1
8/01		4	6	7	12 *		41	295	221	29 *		9	14	0	7 *		2	270	0	0 *
8/02		5	25	37	12 *		28	193	214	29 *		22	23	1	7 *		0	55	0	0 *
8/03		7		20	13		35		216	22		25		0	11		0		0	2
8/04		4		21	5		70		166	3		52		1	6		1		0	1
8/05		4		12	4 *		50		137	2 *		41		12	15 *		0		4	1 *
8/06		2		6	3		38		61	1		59		0	23		0		0	0
8/07		3		4	3		32		63	3		75		3	25		0		0	0
8/08		3		2	8		33		82	2		69		4	119		0		0	0
8/09		5		10	0		13		73	6		70		6	5		0		2	0
8/10		1		0	1		17		24	3		35		8	53		0		0	0
8/11		3		3	6		25		22	6		71		13	116		0		1	0
8/12		8		1	6		34		28	2		198		4	245		0		0	0
8/13		5		7	2		39		56	17		170		23	909		0		0	3
8/14		2		2	7		32		34	5		213		32	480		0		0	0
8/15		4		16	5		9		58	2		92		33	263		0		0	0
8/16		8		5	2		12		24	2		44		70	207		0		0	0
8/17		1		5	0		8		11	2		59		94	186		0		0	0
8/18		1		0	1		5		23	1		103		116	558		0		3	0
8/19		0		1	2		6		25	3		70		68	216		0		2	0
8/20		3		4	0		7		20	7		346		186	1,177		0		0	0
8/21		2		4	0		6		6	4		334		193	1,451		0		0	0
8/22		1		0	1		0		7	0		1,152		85	435		0		0	0
8/23		0		0	2		0		6	1		131		186	49		0		1	0
8/24		0		0	0		0		1	0		162		139	220		0		4	0

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Appendix B.14. (3 of 3)

Date	Chinook					Chum					Coho					Longnose Suckers				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
8/25		0		1	0			2		5	3		66		96				2	0
8/26		0		1	2			5		3	1		275		141			1	2	1
8/27		0		2	0			5		1	1		64		206		13		1	0
8/28		0		0	0			1		4	1		60		230		6		2	0
8/29		0		0	1			4		1	1		17		198		1		1	0
8/30		0		1	0			6		3	1		1,474		70		21		2	0
8/31		0		0	0			9		7	0		275		107		2		1	0
9/01		0		2	0			1		5	2		481		1,296		0		2	0
9/02		0		0	0			0		4	0		202		718		0		2	0
9/03		0		0	0			4		2	1		161		72		7		2	0
9/04		0		0	0			0		9	0		151		185		0		2	0
9/05		0		1	0			4		7	1		261		113		0		3	0
9/06		0		0	0			1		8	0		58		108		0		0	0
9/07		0		0	0			7		4	0		234		114		0		0	0
9/08		0		1	0			0		3	0		34		425		0		0	0
9/09		0		0	0			0		4	0		375		331		0		0	0
9/10		0		0	0			5		0	0		478		86		0		0	0
9/11		0		0	0			0		4	0		174		35		0		0	0
9/12		0		1	0			0		0	0		47		566		0		0	0
9/13		0		0	0			0		1	0		141		676		1		2	0
9/14		0		0	1			0		0	0		105		917		0		0	0
9/15		0		0	0			0		1	0		174		653		0		0	0
9/16				0	0					1	0				60				1	0
9/17				0						0					36				1	
9/18				0						0					145				1	
9/19				0						0					49				2	
9/20				0						1					3				0	
9/21				0						3					12				2	
9/22				0						0					1				6	
9/23				0						2					2				18	
9/24				0						0					1				4	
9/25				0						1					0				2	
Total	7,487	7,820	2,505	4,227	2,959	17,570	5,940	6,391	11,682	3,488	173	8,937	52	8,930	11,256	3,555	8,121	6,632	278	7,687

* estimated fish passage

Appendix B.15. Estimated historical daily cumulative fish passage at George River weir.

Date	Chinook					Chum					Coho					Longnose Suckers				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
6/09		2		0 *			0		0 *			0		0 *			401			
6/10		2		0 *			0		0 *			0		0 *			661			
6/11		4		0 *			0		0 *			0		0 *			882			
6/12		5		0 *			0		0 *			0		0 *			1,027			
6/13		5		0 *			0		0 *			0		0 *			1,393			
6/14		11		0 *			0		0 *			0		0 *			1,719			
6/15		37		0 *			0		0 *			0		0 *			2,149			
6/16		37		0 *			1		0 *			0		0 *			2,411			
6/17		48		9 *	0		3		0 *	0		0		0 *	0		2,479			45
6/18		56		14 *	0		3		0 *	0		0		0 *	0		2,702			393
6/19		98		19 *	0		5		0 *	0		0		0 *	0		2,802			427
6/20		98		33 *	0		5		0 *	0		0		0 *	0		2,802			500
6/21	27	115		43 *	0	65	5		0 *	5	0	0		0 *	0	519	3,078			738
6/22	44	133	1	76 *	2	678	8	1	0 *	11	0	0	0	0 *	0	1,351	3,148	2		1,081
6/23	313	495	4	88 *	12	1,992	43	1	0 *	49	0	0	0	0 *	0	2,054	3,352	48		2,008
6/24	1,075	983	8	93 *	23	2,684	95	7	22 *	66	0	0	0	0 *	0	2,292	3,424	266		2,694
6/25	1,289	1,890	22	131 *	28	2,733	136	30	30 *	83	0	0	0	0 *	0	2,577	3,544	372		3,898
6/26	1,330	2,178	66	142 *	29	3,109	185	192	52 *	84	0	0	0	0 *	0	2,639	3,706	1,060		4,028
6/27	1,513	2,692	101	173 *	149	3,617	264	308	82 *	174	0	0	0	0 *	0	2,935	3,991	1,981		4,290
6/28	1,611	3,089	271	235 *	149	3,784	298	597	162 *	174	0	0	0	0 *	0	2,937	4,357	2,968		4,296
6/29	1,702	3,655	397	268 *	157	3,975	476	885	243 *	178	0	0	0	0 *	0	2,938	4,693	3,845		4,304
6/30	1,786	4,422	561	304 *	165	4,190	680	1,284	313 *	190	0	0	0	0 *	0	2,938	4,938	4,947		4,304
7/01	2,820	4,878	849	337 *	228	4,688	744	1,918	422 *	298	0	0	0	0 *	0	2,939	5,429	5,419		4,312
7/02	3,532	5,155	1,246	368 *	644	5,418	829	2,306	525 *	571	0	0	0	0 *	0	2,954	5,644	5,534		4,321
7/03	3,921	5,739	1,674	418 *	759	6,379	1,096	2,863	647 *	699	0	0	0	0 *	0	2,983	6,049	5,864		4,716
7/04	4,241	6,086	1,961	513 *	828	7,453	1,179	3,468	779 *	776	0	0	0	0 *	0	2,983	6,354	5,983		5,040
7/05	4,521	6,307	2,206	701 *	876	7,779	1,353	4,428	892 *	848	0	0	0	0 *	0	3,008	6,559	6,178		6,005
7/06	5,100	6,601	2,409	981 *	927	8,385	1,464	4,867	1,061 *	1,066	0	0	0	0 *	0	3,051	6,735	6,279		6,029
7/07	5,280	6,694	2,442	1,109 *	1,158	8,960	1,516	4,990	1,267 *	1,228	0	0	0	0 *	0	3,070	6,808	6,295		6,429
7/08	5,402	6,728		1,177 *	1,295	9,589	1,565		1,457 *	1,275	0	0		0 *	0	3,072	7,109			6,441
7/09	5,838	6,765		1,383 *	1,376	10,441	1,605		1,846 *	1,315	0	0		0 *	0	3,221	7,113			6,548
7/10	5,965	6,794		1,568 *	1,391	10,682	1,667		2,316 *	1,373	0	0		0 *	0	3,223	7,192			6,561
7/11	6,341	6,827		1,589 *	1,886	11,128	1,712		2,801 *	1,809	0	0		0 *	0	3,229	7,198			6,822
7/12	6,394	7,072		1,647 *	2,002	11,471	1,949		3,301 *	1,970	0	0		0 *	0	3,230	7,307			7,398
7/13	6,454	7,103		1,907 *	2,012	11,865	1,956		3,638 *	2,061	0	0		0 *	0	3,233	7,331			7,582
7/14	6,581	7,114		2,363	2,034	12,354	1,968		3,820	2,102	0	0		0	0	3,233	7,362		54	7,582
7/15	6,905	7,179		2,406	2,051	12,910	2,126		4,014	2,124	0	0		0	0	3,254	7,364		96	7,648
7/16	6,983	7,185		2,602	2,197	13,142	2,177		4,347	2,274	1	0		0	0	3,269	7,364		121	7,649
7/17	7,050	7,207		2,663	2,301	13,604	2,413		4,674	2,362	1	0		0	0	3,284	7,403		141	7,649

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Appendix B.15. (2 of 3)

Date	Chinook					Chum					Coho					Longnose Suckers				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
7/18	7,157	7,249		2,824	2,314	14,118	2,620		5,068	2,417	1	0		0	0	3,299	7,404		150	7,649
7/19	7,220	7,336		3,027	2,533	14,785	3,195		5,836	2,561	2	0		0	0	3,299	7,414		164	7,651
7/20	7,269	7,447		3,186	2,542	15,107	3,495		6,545	2,579	5	2		0	0	3,307	7,834		182	7,652
7/21	7,327	7,530		3,223	2,555	15,494	3,837		6,861	2,620	5	3		0	0	3,453	7,910		186	7,654
7/22	7,353	7,579		3,281	2,596	15,767	3,981		7,240	2,707	5	5		0	1	3,555	7,935		190	7,656
7/23	7,382	7,611		3,342	2,683	16,088	4,273		7,705	2,879	11	5		0	3	3,555	8,007		193	7,660
7/24	7,436	7,618		3,503	2,705	16,613	4,480		8,238	2,995	33	7		0	3	3,555	8,012		193	7,661
7/25	7,470	7,659		3,706	2,730	17,062	4,718		8,681	3,071	80	9		0	3	3,555	8,033		195	7,668
7/26	7,487	7,677		3,865	2,764	17,570	4,828		9,034	3,127	173	10		0	8	3,555	8,033		198	7,674
7/27		7,686		3,902	2,807		4,870		9,229	3,174		12		0	12		8,033		200	7,678
7/28		7,711		3,960	2,817		5,046		9,521	3,208		15		1	12		8,039		200	7,678
7/29		7,718		4,007	2,828		5,142		9,669	3,236		17		1	12		8,043		200	7,678
7/30		7,731	2,460	4,026	2,833		5,213	5,536	9,734	3,262		20	7	1	12		8,049	6,303	200	7,678
7/31		7,744	2,474	4,050	2,859		5,346	5,903	10,020	3,325		28	15	1	21		8,066	6,307	200	7,679
8/01		7,748	2,480	4,057	2,871 *		5,387	6,198	10,241	3,354 *		37	29	1	28 *		8,068	6,577	200	7,679 *
8/02		7,753	2,505	4,094	2,884 *		5,415	6,391	10,455	3,382 *		59	52	2	34 *		8,068	6,632	200	7,679 *
8/03		7,760		4,114	2,897		5,450		10,671	3,404		84		2	45		8,068		200	7,681
8/04		7,764		4,135	2,902		5,520		10,837	3,407		136		3	51		8,069		200	7,682
8/05		7,768		4,147	2,906 *		5,570		10,974	3,409 *		177		15	66 *		8,069		204	7,683 *
8/06		7,770		4,153	2,909		5,608		11,035	3,410		236		15	89		8,069		204	7,683
8/07		7,773		4,157	2,912		5,640		11,098	3,413		311		18	114		8,069		204	7,683
8/08		7,776		4,159	2,920		5,673		11,180	3,415		380		22	233		8,069		204	7,683
8/09		7,781		4,169	2,920		5,686		11,253	3,421		450		28	238		8,069		206	7,683
8/10		7,782		4,169	2,921		5,703		11,277	3,424		485		36	291		8,069		206	7,683
8/11		7,785		4,172	2,927		5,728		11,299	3,430		556		49	407		8,069		207	7,683
8/12		7,793		4,173	2,933		5,762		11,327	3,432		754		53	652		8,069		207	7,683
8/13		7,798		4,180	2,935		5,801		11,383	3,449		924		76	1,561		8,069		207	7,686
8/14		7,800		4,182	2,942		5,833		11,417	3,454		1,137		108	2,041		8,069		207	7,686
8/15		7,804		4,198	2,947		5,842		11,475	3,456		1,229		141	2,304		8,069		207	7,686
8/16		7,812		4,203	2,949		5,854		11,499	3,458		1,273		211	2,511		8,069		207	7,686
8/17		7,813		4,208	2,949		5,862		11,510	3,460		1,332		305	2,697		8,069		207	7,686
8/18		7,814		4,208	2,950		5,867		11,533	3,461		1,435		421	3,255		8,069		210	7,686
8/19		7,814		4,209	2,952		5,873		11,558	3,464		1,505		489	3,471		8,069		212	7,686
8/20		7,817		4,213	2,952		5,880		11,578	3,471		1,851		675	4,648		8,069		212	7,686
8/21		7,819		4,217	2,952		5,886		11,584	3,475		2,185		868	6,099		8,069		212	7,686
8/22		7,820		4,217	2,953		5,886		11,591	3,475		3,337		953	6,534		8,069		212	7,686
8/23		7,820		4,217	2,955		5,886		11,597	3,476		3,468		1,139	6,583		8,069		213	7,686
8/24		7,820		4,217	2,955		5,886		11,598	3,476		3,630		1,278	6,803		8,069		217	7,686

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Appendix B.15. (3 of 3)

Date	Chinook					Chum					Coho					Longnose Suckers				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
8/25		7,820		4,218	2,955		5,888		11,603	3,479		3,696		1,374	7,076		8,069		219	7,686
8/26		7,820		4,219	2,957		5,893		11,606	3,480		3,971		1,515	7,386		8,070		221	7,687
8/27		7,820		4,221	2,957		5,898		11,607	3,481		4,035		1,721	8,614		8,083		222	7,687
8/28		7,820		4,221	2,957		5,899		11,611	3,482		4,095		1,951	9,715		8,089		224	7,687
8/29		7,820		4,221	2,958		5,903		11,612	3,483		4,112		2,149	10,352		8,090		225	7,687
8/30		7,820		4,222	2,958		5,909		11,615	3,484		5,586		2,219	10,596		8,111		227	7,687
8/31		7,820		4,222	2,958		5,918		11,622	3,484		5,861		2,326	10,693		8,113		228	7,687
9/01		7,820		4,224	2,958		5,919		11,627	3,486		6,342		3,622	10,748		8,113		230	7,687
9/02		7,820		4,224	2,958		5,919		11,631	3,486		6,544		4,340	10,879		8,113		232	7,687
9/03		7,820		4,224	2,958		5,923		11,633	3,487		6,705		4,412	11,024		8,120		234	7,687
9/04		7,820		4,224	2,958		5,923		11,642	3,487		6,856		4,597	11,097		8,120		236	7,687
9/05		7,820		4,225	2,958		5,927		11,649	3,488		7,117		4,710	11,188		8,120		239	7,687
9/06		7,820		4,225	2,958		5,928		11,657	3,488		7,175		4,818	11,202		8,120		239	7,687
9/07		7,820		4,225	2,958		5,935		11,661	3,488		7,409		4,932	11,202		8,120		239	7,687
9/08		7,820		4,226	2,958		5,935		11,664	3,488		7,443		5,357	11,212		8,120		239	7,687
9/09		7,820		4,226	2,958		5,935		11,668	3,488		7,818		5,688	11,223		8,120		239	7,687
9/10		7,820		4,226	2,958		5,940		11,668	3,488		8,296		5,774	11,226		8,120		239	7,687
9/11		7,820		4,226	2,958		5,940		11,672	3,488		8,470		5,809	11,240		8,120		239	7,687
9/12		7,820		4,227	2,958		5,940		11,672	3,488		8,517		6,375	11,243		8,120		239	7,687
9/13		7,820		4,227	2,958		5,940		11,673	3,488		8,658		7,051	11,245		8,121		241	7,687
9/14		7,820		4,227	2,959		5,940		11,673	3,488		8,763		7,968	11,248		8,121		241	7,687
9/15		7,820		4,227	2,959		5,940		11,674	3,488		8,937		8,621	11,253		8,121		241	7,687
9/16				4,227	2,959				11,675	3,488				8,681	11,256				242	7,687
9/17				4,227					11,675					8,717					243	
9/18				4,227					11,675					8,862					244	
9/19				4,227					11,675					8,911					246	
9/20				4,227					11,676					8,914					246	
9/21				4,227					11,679					8,926					248	
9/22				4,227					11,679					8,927					254	
9/23				4,227					11,681					8,929					272	
9/24				4,227					11,681					8,930					276	
9/25				4,227					11,682					8,930					278	

* estimated fish passage

Appendix B.16. Estimated historical daily cumulative percent fish passage at George River weir.^a

Date	Chinook					Chum					Coho					Suckers				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
6/09		0					0					0		0						5
6/10		0					0					0		0						8
6/11		0					0					0		0						11
6/12		0					0					0		0						13
6/13		0					0					0		0						17
6/14		0					0					0		0						21
6/15		0		0			0		0			0		0						26
6/16		0		0			0		0			0		0						30
6/17		1		0	0		0		0	0		0		0	0					31
6/18		1		0	0		0		0	0		0		0	0					33
6/19		1		0	0		0		0	0		0		0	0					34
6/20		1		0	0		0		0	0		0		0	0					34
6/21	0	1		0	0	0	0		0	0	0	0		0	0			15		38
6/22	1	2		0	0	4	0		0	0	0	0		0	0			38		39
6/23	4	6		0	0	11	1		0	1	0	0		0	0			58		41
6/24	14	13		0	1	15	2		0	2	0	0		0	0			64		42
6/25	17	24		1	1	16	2		0	2	0	0		0	0			72		44
6/26	18	28		1	1	18	3		0	2	0	0		0	0			74		46
6/27	20	34		1	5	21	4		1	5	0	0		0	0			83		49
6/28	22	40		2	5	22	5		1	5	0	0		0	0			83	54	
6/29	23	47		2	5	23	8		2	5	0	0		0	0			83	58	
6/30	24	57		3	6	24	11		3	5	0	0		0	0			83	61	
7/01	38	62		4	8	27	13		4	9	0	0		0	0			83	67	
7/02	47	66		4	22	31	14		4	16	0	0		0	0			83	69	
7/03	52	73		5	26	36	18		6	20	0	0		0	0			84	74	
7/04	57	78		7	28	42	20		7	22	0	0		0	0			84	78	
7/05	60	81		8	30	44	23		8	24	0	0		0	0			85	81	
7/06	68	84		9	31	48	25		9	31	0	0		0	0			86	83	
7/07	71	86		10	39	51	26		11	35	0	0		0	0			86	84	
7/08	72	86		10	44	55	26		12	37	0	0		0	0			86	88	
7/09	78	87		12	47	59	27		16	38	0	0		0	0			91	88	
7/10	80	87		14	47	61	28		20	39	0	0		0	0			91	89	
7/11	85	87		20	64	63	29		24	52	0	0		0	0			91	89	
7/12	85	90		28	68	65	33		28	56	0	0		0	0			91	90	
7/13	86	91		31	68	68	33		31	59	0	0		0	0			91	90	
7/14	88	91		33	69	70	33		33	60	0	0		0	0			91	91	
7/15	92	92		39	69	73	36		34	61	0	0		0	0			92	91	
7/16	93	92		44	74	75	37		37	65	1	0		0	0			92	91	
7/17	94	92		45	78	77	41		40	68	1	0		0	0			92	91	

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Appendix B.16. (2 of 3)

Date	Chinook					Chum					Coho					Suckers				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
7/18	96	93	46	78	80	44		43	69		1	0		0	0	93	91			
7/19	96	94	54	86	84	54		50	73		1	0		0	0	93	91			
7/20	97	95	67	86	86	59		56	74		3	0		0	0	93	96			
7/21	98	96	68	86	88	65		59	75		3	0		0	0	97	97			
7/22	98	97	73	88	90	67		62	78		3	0		0	0	100	98			
7/23	99	97	75	91	92	72		66	83		6	0		0	0	100	99			
7/24	99	97	80	91	95	75		71	86		19	0		0	0	100	99			
7/25	100	98	85	92	97	79		74	88		46	0		0	0	100	99			
7/26	100	98	90	93	100	81		77	90	100	0			0	0	100	99			
7/27		98	91	95		82		79	91		0			0	0		99			
7/28		99	92	95		85		82	92		0			0	0		99			
7/29		99	94	96		87		83	93		0			0	0		99			
7/30		99	94	96		88		83	94		0			0	0		99			
7/31		99	95	97		90		86	95		0			0	0		99			
8/01		99	95	97		91		88	96		0			0	0		99			
8/02		99	96	97		91		89	97		1			0	0		99			
8/03		99	97	98		92		91	98		1			0	0		99			
8/04		99	97	98		93		93	98		2			0	0		99			
8/05		99	98	98		94		94	98		2			0	1		99			
8/06		99	98	98		94		94	98		3			0	1		99			
8/07		99	98	98		95		95	98		3			0	1		99			
8/08		99	98	99		96		96	98		4			0	2		99			
8/09		100	98	99		96		96	98		5			0	2		99			
8/10		100	98	99		96		97	98		5			0	3		99			
8/11		100	98	99		96		97	98		6			1	4		99			
8/12		100	98	99		97		97	98		8			1	6		99			
8/13		100	99	99		98		97	99		10			1	14		99			
8/14		100	99	99		98		98	99		13			1	18		99			
8/15		100	99	100		98		98	99		14			2	20		99			
8/16		100	99	100		99		98	99		14			2	22		99			
8/17		100	99	100		99		99	99		15			3	24		99			
8/18		100	99	100		99		99	99		16			5	29		99			
8/19		100	99	100		99		99	99		17			5	31		99			
8/20		100	100	100		99		99	100		21			8	41		99			
8/21		100	100	100		99		99	100		24			10	54		99			
8/22		100	100	100		99		99	100		37			11	58		99			
8/23		100	100	100		99		99	100		39			13	58		99			
8/24		100	100	100		99		99	100		41			14	60		99			

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Appendix B.16. (3 of 3)

Date	Chinook					Chum					Coho					Suckers				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
8/25		100		100	100		99		99	100		41		15	63			99		
8/26		100		100	100		99		99	100		44		17	66			99		
8/27		100		100	100		99		99	100		45		19	77			100		
8/28		100		100	100		99		99	100		46		22	86			100		
8/29		100		100	100		99		99	100		46		24	92			100		
8/30		100		100	100		99		99	100		63		25	94			100		
8/31		100		100	100		100		99	100		66		26	95			100		
9/01		100		100	100		100		100	100		71		41	95			100		
9/02		100		100	100		100		100	100		73		49	97			100		
9/03		100		100	100		100		100	100		75		49	98			100		
9/04		100		100	100		100		100	100		77		51	99			100		
9/05		100		100	100		100		100	100		80		53	99			100		
9/06		100		100	100		100		100	100		80		54	100			100		
9/07		100		100	100		100		100	100		83		55	100			100		
9/08		100		100	100		100		100	100		83		60	100			100		
9/09		100		100	100		100		100	100		87		64	100			100		
9/10		100		100	100		100		100	100		93		65	100			100		
9/11		100		100	100		100		100	100		95		65	100			100		
9/12		100		100	100		100		100	100		95		71	100			100		
9/13		100		100	100		100		100	100		97		79	100			100		
9/14		100		100	100		100		100	100		98		89	100			100		
9/15		100		100	100		100		100	100		100		97	100			100		
9/16				100	100				100	100				97	100					
9/17				100					100					98						
9/18				100					100					99						
9/19				100					100					100						
9/20				100					100					100						
9/21				100					100					100						
9/22				100					100					100						
9/23				100					100					100						
9/24				100					100					100						
9/25				100					100					100						

^a The boxed areas within each column represent the central 50 percent test-fish catches and the median; years without boxed areas or numbers had truncated operational periods which disallowed estimating run timing.

Appendix B.17. Estimated historical daily fish passage at Tatlawiksuk River weir.

Date	Chinook			Sockeye			Chum			Pink			Coho			Longnose Sucker		
	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000
6/15		0	0		0	0		0	1		0	0		0	0	1,380	3	
6/16		0	0		0	0		0	1		0	0		0	0	757	1	
6/17		0	0		0	0		0	0		0	0		0	0	277	122	
6/18	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	67	291	35
6/19	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	151	263	36
6/20	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	101	3
6/21	0	0	0	0	0	0	5	0	2	0	0	0	0	0	0	24	71	12
6/22	0	0	1	0	0	0	4	0	7	0	0	0	0	0	0	23	5	159
6/23	8	4	0	0	0	0	12	0	1	0	0	0	0	0	0	327	325	154
6/24	12	2	10	0	0	0	25	18	18	0	0	0	0	0	0	108	500	198
6/25	7	2	0	0	0	0	26	7	30	0	0	0	0	0	0	215	115	51
6/26	12	6	20	0	0	0	65	18	97	0	0	0	0	0	0	290	183	55
6/27	37	4	2	0	0	0	197	25	7	0	0	0	0	0	0	517	124	12
6/28	31	14	5	0	0	0	275	67	10	0	0	0	0	0	0	359	93	18
6/29	23	5	2	0	0	0	195	67	3	0	0	0	0	0	0	245	82	0
6/30	5	2	22	0	0	0	146	58	88	0	0	0	0	0	0	133	86	0
7/01	99	16	26	0	0	0	464	91	176	0	0	0	0	0	0	61	159	5
7/02	182	5	149	0	0	0	529	86	492	0	0	0	0	0	0	130	25	19
7/03	171	13	47	0	0	0	556	101	280	0	0	0	0	0	0	215	28	116
7/04	224	26	30	0	0	0	1,005	110	147	0	0	0	0	0	0	155	12	36
7/05	74	14	42	0	0	0	1,011	94	325	0	0	0	0	0	0	127	53	0
7/06	62	15	17	0	0	0	757	141	155	0	0	0	0	0	0	55	56	1
7/07	22	14	18	0	0	0	454	171	175	0	0	0	0	0	0	1	14	0
7/08		13	13		0	0		158	109		0	0		0	0		19	0
7/09		21	73		0	0		324	462		0	0		0	0		11	2
7/10		40	51		0	0		391	247		0	0		0	0		6	0
7/11		79*	45		0*	0		404*	391		0*	0		0*	0		17*	1
7/12		118	50		0	0		416	611		0	0		0	0		1	9
7/13		54	9		0	0		280	169		0	0		0	0		2	4
7/14		64	0		0	0		361	33		0	0		0	0		1	0
7/15		24	8		0	0		268	266		0	0		0	0		8	0
7/16		65	20		0	0		377	367		0	0		0	0		16	0
7/17		6	47		0	0		339	257		0	0		0	0		0	0
7/18		146	5		0	0		404	183		0	0		0	0		1	0
7/19		20	8		0	0		160	144		0	0		0	2		3	0
7/20		381	10		0	0		663	88		0	0		0	0		4	0
7/21		18	2		0	0		306	176		0	0		0	1		1	0
7/22		9	16		0	0		275	238		0	0		0	0		0	0
7/23		86	7		0	0		628	158		0	0		0	0		0	0
7/24		46	5		0	0		322	152		0	0		0	1		0	0
7/25		33	8		0	0		338	114		0	0		1	0		0	0
7/26		18	2		0	0		205	85		0	0		0	0		0	0
7/27		14*	3		1*	0		214*	122		0*	0		1*	0		0*	0
7/28		10	1		2	0		222	93		0	0		2	3		0	0
7/29		22	1		0	0		130	94		0	0		9	2		0	0
7/30		15	6		0	0		285	141		0	0		1	25		0	0
7/31		6	1		0	0		141	72		0	0		1	11		0	0
8/01		6	2		0	0		171	41		0	0		0	40		0	0
8/02		1	3*		0	0*		125	37*		0	0*		0	110*		0	0*
8/03		4	8		2	0		141	18		0	0		0	172		0	0
8/04		3	2		0	0		60	15		0	0		0	215		0	0
8/05		5	0		0	0		57	8		0	0		2	173		0	0
8/06		3	1		0	0		35	9		0	0		0	129		0	0
8/07		2	1		0	0		43	12		0	0		5	277		0	0
8/08		4	3		0	0		24	5		0	0		1	108		0	0
8/09		0	1		0	0		42	2		1	0		1	267		0	0
8/10		1*	1		0*	0		35*	5		0*	0		3*	619		0*	0
8/11		1*	1		0*	0		32*	7		0*	0		5*	730		0*	0
8/12		1*	0		0*	0		30*	8		0*	0		2*	1,123		0*	0
8/13		1*	1		0*	0		28*	9		0*	0		9*	1,429		0*	0
8/14		1*	*		0*	0*		26*	0*		0*	0*		12*	319*		0*	0*

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Appendix B.17. (2 of 2)

Date	Chinook			Sockeye			Chum			Pink			Coho			Longnose Sucker		
	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000
8/15		1*			0*		24*				0*		13*			0*		
8/16		1*			0*		21*				0*		27*			0*		
8/17		1*			0*		19*				0*		37*			0*		
8/18		1*			0*		17*				0*		45*			0*		
8/19		1*			0*		15*				0*		26*			0*		
8/20		1*			0*		13*				0*		72*			0*		
8/21		1*			0*		10*				0*		75*			0*		
8/22		1*			0*		8*				0*		33*			0*		
8/23		1*			0*		6*				0*		72*			0*		
8/24		0			0		1				0		103			0		
8/25		1			0		0				0		88			0		
8/26		0*			0*		2*				0*		93*			0*		
8/27		0			0		2				0		97			0		
8/28		0			0		0				0		181			0		
8/29		0			0		0				0		171			0		
8/30		0			0		0				0		93			0		
8/31		0			0		1				0		184			0		
9/01		0			0		0				0		239			0		
9/02		1			1		1				0		170			0		
9/03		0			0		0				0		140			0		
9/04		0			0		0				0		190			1		
9/05		0			0		1				0		193			1		
9/06		0			0		2				0		103			1		
9/07		0			0		0				0		30			0		
9/08		0			0		0				0		35			0		
9/09		0			0		0				0		53			0		
9/10		0			0		0				0		303			0		
9/11		0			0		0				0		81			0		
9/12		0			0		0				0		81			0		
9/13		0			0		0				0		99			0		
9/14		0			0		0				0		82			0		
9/15		0			0		0				0		51			0		
9/16		0			0		0				0		26			0		
9/17		0			0		0				0		32			0		
9/18		0			0		0				0		18			0		
9/19		0			0		0				0		56			0		
9/20		0			0		0				0		17			0		
Total	2,968	3,493	2,810	1,998	2,005	2,000	7,724	11,655	8,965	1,998	2,000	2,000	1,998	5,463	7,756	5,244	7,092	3,052

* estimated fish passage

Appendix B.18. Estimated historical daily cumulative fish passage at Tatlawiksuk River weir.

Date	Chinook			Chum			Coho			Longnose Sucker		
	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000
6/15		0	0		0	1		0	0		1,380	3
6/16		0	0		0	2		0	0		2,137	4
6/17		0	0		0	2		0	0		2,414	126
6/18	0	0	2	0	0	4	0	0	0	67	2,705	161
6/19	0	0	4	0	0	4	0	0	0	218	2,968	197
6/20	1	0	4	0	0	4	0	0	0	261	3,069	200
6/21	1	0	4	5	0	6	0	0	0	285	3,140	212
6/22	1	0	5	9	0	13	0	0	0	308	3,145	371
6/23	9	4	5	21	0	14	0	0	0	635	3,470	525
6/24	21	6	15	46	18	32	0	0	0	743	3,970	723
6/25	28	8	15	72	25	62	0	0	0	958	4,085	774
6/26	40	14	35	137	43	159	0	0	0	1,248	4,268	829
6/27	77	18	37	334	68	166	0	0	0	1,765	4,392	841
6/28	108	32	42	609	135	176	0	0	0	2,124	4,485	859
6/29	131	37	44	804	202	179	0	0	0	2,369	4,567	859
6/30	136	39	66	950	260	267	0	0	0	2,502	4,653	859
7/01	235	55	92	1,414	351	443	0	0	0	2,563	4,812	864
7/02	417	60	241	1,943	437	935	0	0	0	2,693	4,837	883
7/03	588	73	288	2,499	538	1,215	0	0	0	2,908	4,865	999
7/04	812	99	318	3,504	648	1,362	0	0	0	3,063	4,877	1,035
7/05	886	113	360	4,515	742	1,687	0	0	0	3,190	4,930	1,035
7/06	948	128	377	5,272	883	1,842	0	0	0	3,245	4,986	1,036
7/07	970	142	395	5,726	1,054	2,017	0	0	0	3,246	5,000	1,036
7/08		155	408		1,212	2,126		0	0		5,019	1,036
7/09		176	481		1,536	2,588		0	0		5,030	1,038
7/10		216	532		1,927	2,835		0	0		5,036	1,038
7/11		295 *	577		2,331 *	3,226		0 *	0		5,053 *	1,039
7/12		413	627		2,747	3,837		0	0		5,054	1,048
7/13		467	636		3,027	4,006		0	0		5,056	1,052
7/14		531	636		3,388	4,039		0	0		5,057	1,052
7/15		555	644		3,656	4,305		0	0		5,065	1,052
7/16		620	664		4,033	4,672		0	0		5,081	1,052
7/17		626	711		4,372	4,929		0	0		5,081	1,052
7/18		772	716		4,776	5,112		0	0		5,082	1,052
7/19		792	724		4,936	5,256		0	2		5,085	1,052
7/20		1,173	734		5,599	5,344		0	2		5,089	1,052
7/21		1,191	736		5,905	5,520		0	3		5,090	1,052
7/22		1,200	752		6,180	5,758		0	3		5,090	1,052
7/23		1,286	759		6,808	5,916		0	3		5,090	1,052
7/24		1,332	764		7,130	6,068		0	4		5,090	1,052
7/25		1,365	772		7,468	6,182		1	4		5,090	1,052
7/26		1,383	774		7,673	6,267		1	4		5,090	1,052
7/27		1,397 *	777		7,886 *	6,389		2 *	4		5,090 *	1,052
7/28		1,407	778		8,108	6,482		4	7		5,090	1,052
7/29		1,429	779		8,238	6,576		13	9		5,090	1,052
7/30		1,444	785		8,523	6,717		14	34		5,090	1,052
7/31		1,450	786		8,664	6,789		15	45		5,090	1,052
8/01		1,456	788		8,835	6,830		15	85		5,090	1,052
8/02		1,457	791 *		8,960	6,867 *		15	195 *		5,090	1,052 *
8/03		1,461	799		9,101	6,885		15	367		5,090	1,052

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Appendix B.18. (2 of 2)

Date	Chinook			1998	Chum		Coho			Longnose Sucker		
	1998	1999	2000		1999	2000	1998	1999	2000	1998	1999	2000
8/04		1,464	801		9,161	6,900		15	582		5,090	1,052
8/05		1,469	801		9,218	6,908		17	755		5,090	1,052
8/06		1,472	802		9,253	6,917		17	884		5,090	1,052
8/07		1,474	803		9,296	6,929		22	1,161		5,090	1,052
8/08		1,478	806		9,320	6,934		23	1,269		5,090	1,052
8/09		1,478	807		9,362	6,936		24	1,536		5,090	1,052
8/10		1,479 *	808		9,397 *	6,941		27 *	2,155		5,090 *	1,052
8/11		1,480 *	809		9,429 *	6,948		32 *	2,885		5,090 *	1,052
8/12		1,481 *	809		9,459 *	6,956		34 *	4,008		5,090 *	1,052
8/13		1,482 *	810		9,487 *	6,965		43 *	5,437		5,090 *	1,052
8/14		1,483 *	*		9,513 *	*		55 *	*		5,090 *	*
8/15		1,484 *	*		9,537 *	*		68 *	*		5,090 *	*
8/16		1,485 *	*		9,558 *	*		95 *	*		5,090 *	*
8/17		1,486 *	*		9,577 *	*		132 *	*		5,090 *	*
8/18		1,487 *	*		9,594 *	*		177 *	*		5,090 *	*
8/19		1,488 *	*		9,609 *	*		203 *	*		5,090 *	*
8/20		1,489 *	*		9,621 *	*		275 *	*		5,090 *	*
8/21		1,490 *	*		9,632 *	*		351 *	*		5,090 *	*
8/22		1,491 *	*		9,640 *	*		384 *	*		5,090 *	*
8/23		1,492 *	*		9,646 *	*		456 *	*		5,090 *	*
8/24		1,492	*		9,647	*		559	*		5,090	*
8/25		1,493	*		9,647	*		647	*		5,090	*
8/26		1,493 *	*		9,649 *	*		739 *	*		5,090 *	*
8/27		1,493	*		9,651	*		836	*		5,090	*
8/28		1,493	*		9,651	*		1,017	*		5,090	*
8/29		1,493	*		9,651	*		1,188	*		5,090	*
8/30		1,493	*		9,651	*		1,281	*		5,090	*
8/31		1,493	*		9,652	*		1,465	*		5,090	*
9/01		1,493	*		9,652	*		1,704	*		5,090	*
9/02		1,494	*		9,653	*		1,874	*		5,090	*
9/03		1,494	*		9,653	*		2,014	*		5,090	*
9/04		1,494	*		9,653	*		2,204	*		5,091	*
9/05		1,494	*		9,654	*		2,397	*		5,092	*
9/06		1,494	*		9,656	*		2,500	*		5,093	*
9/07		1,494	*		9,656	*		2,530	*		5,093	*
9/08		1,494	*		9,656	*		2,565	*		5,093	*
9/09		1,494	*		9,656	*		2,618	*		5,093	*
9/10		1,494	*		9,656	*		2,921	*		5,093	*
9/11		1,494	*		9,656	*		3,002	*		5,093	*
9/12		1,494	*		9,656	*		3,083	*		5,093	*
9/13		1,494	*		9,656	*		3,182	*		5,093	*
9/14		1,494	*		9,656	*		3,264	*		5,093	*
9/15		1,494	*		9,656	*		3,315	*		5,093	*
9/16		1,494	*		9,656	*		3,341	*		5,093	*
9/17		1,494	*		9,656	*		3,373	*		5,093	*
9/18		1,494	*		9,656	*		3,391	*		5,093	*
9/19		1,494	*		9,656	*		3,447	*		5,093	*
9/20		1,494	*		9,656	*		3,464	*		5,093	*

* estimated fish passage

Appendix B.19. Estimated historical daily cumulative percent fish passage at Tatlawiksuk River weir.

Date	Chinook			Chum			Coho			Longnose Sucker		
	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000
6/15		0	0		0	0		0			27	0
6/16		0	0		0	0		0			42	0
6/17		0	0		0	0		0			47	12
6/18		0	0		0	0		0			53	15
6/19		0	0		0	0		0			58	19
6/20		0	0		0	0		0			60	19
6/21		0	0		0	0		0			62	20
6/22		0	1		0	0		0			62	35
6/23		0	1		0	0		0			68	50
6/24		0	2		0	0		0			78	69
6/25		1	2		0	1		0			80	74
6/26		1	4		0	2		0			84	79
6/27		1	5		1	2		0			86	80
6/28		2	5		1	3		0			88	82
6/29		2	5		2	3		0			90	82
6/30		3	8		3	4		0			91	82
7/01		4	11		4	6		0			94	82
7/02		4	30		5	13		0			95	84
7/03		5	36		6	17		0			96	95
7/04		7	39		7	20		0			96	98
7/05		8	44		8	24		0			97	98
7/06		9	47		9	26		0			98	98
7/07		10	49		11	29		0			98	98
7/08		10	50		13	31		0			99	98
7/09		12	59		16	37		0			99	99
7/10		14	66		20	41		0			99	99
7/11		20	71		24	46		0			99	99
7/12		28	77		28	55		0			99	100
7/13		31	78		31	58		0			99	100
7/14		36	78		35	58		0			99	100
7/15		37	79		38	62		0			99	100
7/16		41	82		42	67		0			100	100
7/17		42	88		45	71		0			100	100
7/18		52	88		49	73		0			100	100
7/19		53	89		51	75		0			100	100
7/20		79	91		58	77		0			100	100
7/21		80	91		61	79		0			100	100
7/22		80	93		64	83		0			100	100
7/23		86	94		71	85		0			100	100
7/24		89	94		74	87		0			100	100
7/25		91	95		77	89		0			100	100
7/26		93	96		79	90		0			100	100
7/27		94	96		82	92		0			100	100
7/28		94	96		84	93		0			100	100
7/29		96	96		85	94		0			100	100
7/30		97	97		88	96		0			100	100
7/31		97	97		90	97		0			100	100
8/01		97	97		91	98		0			100	100
8/02		98	98		93	99		0			100	100
8/03		98	99		94	99		0			100	100

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Appendix B.19. (2 of 2)

Date	Chinook			Chum			Coho			Longnose Sucker		
	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000
8/04		98	99		95	99		0			100	100
8/05		98	99		95	99		0			100	100
8/06		99	99		96	99		0			100	100
8/07		99	99		96	99		1			100	100
8/08		99	100		97	100		1			100	100
8/09		99	100		97	100		1			100	100
8/10		99	100		97	100		1			100	100
8/11		99	100		98	100		1			100	100
8/12		99	100		98	100		1			100	100
8/13		99	100		98	100		1			100	100
8/14		99			99			2			100	
8/15		99			99			2			100	
8/16		99			99			3			100	
8/17		99			99			4			100	
8/18		100			99			5			100	
8/19		100			100			6			100	
8/20		100			100			8			100	
8/21		100			100			10			100	
8/22		100			100			11			100	
8/23		100			100			13			100	
8/24		100			100			16			100	
8/25		100			100			19			100	
8/26		100			100			21			100	
8/27		100			100			24			100	
8/28		100			100			29			100	
8/29		100			100			34			100	
8/30		100			100			37			100	
8/31		100			100			42			100	
9/01		100			100			49			100	
9/02		100			100			54			100	
9/03		100			100			58			100	
9/04		100			100			64			100	
9/05		100			100			69			100	
9/06		100			100			72			100	
9/07		100			100			73			100	
9/08		100			100			74			100	
9/09		100			100			76			100	
9/10		100			100			84			100	
9/11		100			100			87			100	
9/12		100			100			89			100	
9/13		100			100			92			100	
9/14		100			100			94			100	
9/15		100			100			96			100	
9/16		100			100			96			100	
9/17		100			100			97			100	
9/18		100			100			98			100	
9/19		100			100			100			100	
9/20		100			100			100			100	

^a The boxed areas within each column represent the central 50 percent test-fish catches and the median; years without boxed areas or numbers had truncated operational periods which disallowed estimating run timing.

Appendix B.20. Middle Kuskokwim River, District 2 commercial effort 1970-2000.

Year	Unrestricted Mesh Season	Restricted Mesh Season	Coho Salmon Season	Total			
1970	10	a	11	18			
1971	22	a	a	22			
1972	12	a	a	12			
1973	28	a	a	28			
1974	36	a	16	37			
1975	38	a	a	38			
1976	55	a	11	57			
1977	83	54	24	105			
1978	28	a	16	43			
1979	41	a	20	43			
1980	37	21	12	43			
1981	153	11	16	153			
1982	38	50	25	60			
1983	14	42	9	43			
1984	15	49	32	58			
1985	b	17	16	23			
1986	b	21	35	43			
1987	b	24	20	29			
1988	b	19	21	29			
Number of Permits Landing Each Species							
	<u>Chinook</u>	<u>Sockeye</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u>	<u>Roe</u>	<u>Total</u>
1989	20	19	29	8	26	2	30
1990	19	19	21	13	20	0	22
1991	20	20	22	9	22	0	23
1992	18	18	22	3	21	0	22
1993	10	4	20	0	19	0	20
1994	5	3	20	7	20	0	20
1995	18	19	15	0	20	0	21
1996	6	3	8	0	6	6	8
1997	3	1	4	0	2	0	4
1998	2	0	3	0	3	0	3
1999	a	a	a	a	a	a	a
2000	0	0	4	0	1	0	4
Ten Year Average (1990-1999)	10	9	14	3	13	1	14

a No commercial salmon season.

b No unrestricted mesh season.

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Appendix C.1. Quinhagak District commercial effort, 1970-2000.

YEAR	NUMBER OF PERIODS	FISHING HOURS ^a	EFFORT ^b
1970	14	1494	88
1971	6	630	61
1972	16	192	107
1973	28	504	109
1974	30	360	196
1975	24	288	127
1976	27	324	181
1977	27	324	258
1978	37	444	200
1979	36	432	206
1980	36	432	169
1981	33	396	186
1982	34	408	177
1983	28	318	226
1984	33	396	263
1985	23	276	300
1986	29	348	324
1987	19	216	310
1988	32	384	288
1989	29	348	227
1990	30	444	390
1991	31	372	346
1992	34	420	349
1993	32	384	409
1994	32	384	308
1995	35	414	382
1996	27	298	218
1997	31	372	289
1998	34	408	203
1999	19	228	218
2000	27	324	230
Ten Year Average (1990-1999)	27	372	311

a Number of hours that fishing was open in the Quinhagak District.

b Permits that made at least one delivery during the year.

Appendix C.2. Historical commercial effort by salmon species caught in Quinhagak District,
1975-2000.

YEAR	CHINOOK	SOCKEYE	COHO	PINK	CHUM	TOTAL
1975	120	124	81	99	124	127
1976	169	145	90	167	176	181
1977	245	205	76	76	260	258
1978	195	101	77	140	197	200
1979 ^b						206
1980	152	126	120	143	156	169
1981	187	176	142	56	190	186
1982 ^b						177
1983	216	204	111	81	213	226
1984	238	229	227	209	238	263
1985	284	276	167	26	286	300
1986	320	307	148	201	315	324
1987	289	268	184	34	290	310
1988	253	186	182	167	236	288
1989	208	191	160	75	211	227
1990	377	371	138	259	386	390
1991	319	332	164	0	330	346
1992	329	340	189	280	341	349
1993	403	406	158	4	402	409
1994	288	278	136	238	289	308
1995	364	345	173	72	367	382
1996	202	212	137	1	210	218
1997	286	284	113	3	275	289
1998	199	199	117	76	196	203
1999	212	214	86	0	212	218
2000	220	228	112	1	225	230
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Ten Year Average (90-99)	294	298	141	171 ^a	301	311

a Average of even years only.

b Catch by permit unavailable.

Appendix C.3. Quinhagak District commercial salmon harvest, 1960-2000.

YEAR	CHINOOK	SOCKEYE	COHO	PINK	CHUM	TOTAL
1960	0	5,649	3,000	0	0	8,649
1961	4,328	2,308	46	90	18,864	25,636
1962	5,526	10,313	0	4,340	45,707	65,886
1963	6,555	0	0	0	0	6,555
1964	4,081	13,422	379	939	707	19,528
1965	2,976	1,886	0	0	4,242	9,104
1966	278	1,030	0	268	2,610	4,186
1967	0	652	1926	0	8,087	10,665
1968	8,879	5,884	21,511	75,818	19,497	131,589
1969	16,802	3,784	15,077	953	38,206	74,822
1970	18,269	5,393	16,850	15,195	46,556	102,263
1971	4,185	3,118	2,982	13	30,208	40,506
1972	15,880	3,286	376	1,878	17,247	38,667
1973	14,993	2,783	16,515	277	19,680	54,248
1974	8,704	19,510	10,979	43,642	15,298	98,133
1975	3,928	8,584	10,742	486	35,233	58,973
1976	14,110	6,090	13,777	31,412	43,659	109,048
1977	19,090	5,519	9,028	202	43,707	77,546
1978	12,335	7,589	20,114	47,033	24,798	111,869
1979	11,144	18,828	47,525	295	25,995	103,787
1980	10,387	13,221	62,610	21,671	65,984	173,873
1981	24,524	17,292	47,551	160	53,334	142,861
1982	22,106	25,685	73,652	11,838	34,346	167,627
1983	46,385	10,263	32,442	168	23,090	112,348
1984	33,663	17,255	132,151	16,249	50,422	249,740
1985	30,401	7,876	29,992	28	20,418	88,715
1986	22,835	21,484	57,544	8,700	29,700	140,263
1987	26,022	6,489	50,070	66	8,557	91,204
1988	13,883	21,556	68,605	21,310	29,220	154,574
1989	20,820	20,582	44,607	273	39,395	125,677
1990	27,644	83,681	26,926	12,056	47,717	198,024
1991	9,480	53,657	42,571	115	54,493	160,316
1992	17,197	60,929	86,404	64,217	73,383	302,130
1993	15,784	80,934	55,817	7	40,943	193,485
1994	8,564	72,314	83,912	35,904	61,301	261,995
1995	38,584	68,194	66,203	186	81,462	254,629
1996	14,165	57,665	118,718	20	83,005 ^b	273,573
1997	35,510	69,562	32,862	5	38,445	176,384
1998	23,158	41,382	80,183	2,217	45,095	192,035
1999	18,426	41,315	6,184	0	38,091	104,016
2000	21,229	68,557	30,529	3	30,553	150,871

Ten Year
Average
(90 – 99)

20,851 62,963 59,978 21,120^a 56,394 211,659

^a Average of even years only

^b Estimate of chum roe included

Appendix C.4. Kanektok River aerial surveys by species, 1962-2000^a.

Year	SPECIES			
	Chinook	Sockeye	Coho	Chum
1962	935	43,108		
1963				
1964				
1965				
1966	3,718			28,800
1967				
1968	4,170	8,000		14,000
1969				
1970	3,112	11,375		
1971				
1972				
1973	814			
1974				
1975		6,018		
1976		22,936		8,697
1977	5,787	7,244		32,157
1978 ^b	19,180	44,215		229,290
1979				
1980				
1981 ^c	6,172	113,931	69,325	25,950
1982 ^d	15,900	49,175		71,840
1983	8,142	55,940		
1984 ^e	8,890	2,340		9,360
1985	12,182	30,840	46,830	53,060
1986	13,465	16,270		14,385
1987	3,643	14,940		16,790
1988	4,223	51,753	20,056	9,420
1989	11,180	30,440		20,583
1990	7,914	14,735		6,270
1991 ^d	2,563	32,082		2,475
1992 ^f	2,100	44,436	4,330	19,052
1993	3,856	14,955		25,675
1994	4,670	23,128		1,285
1995	7,386	30,090		10,000
1996 ^g				
1997 ^h	6,107	22,020	23,656	7,040
1998	8,080	27,100	5,192	3,270
1999 ⁱ				
2000	1,118	11,670	10,120	10,000
OBJECTIVE:	5,000	15,000		30,500

^a Aerial surveys are those rated fair or good surveys obtained between 20 July and 5 August for chinook and sockeye salmon, 20-31 July for chum salmon, and 20 August and 5 September for coho salmon. Some surveys which do not meet these criteria may be referenced in this table; text are footnoted.

^b Chum salmon count excluded from escapement objective calculation due to exceptional magnitude.

^c Poor survey for chinook, sockeye, chum salmon.

^d Late survey for chinook, sockeye salmon (after 5 August).

^e Poor coho survey.

^f Some chum may have been sockeye.

^g Chum count not at peak, estimate made during chinook survey.

^h Chinook, chum and sockeye numbers from 2 August. Chum not at peak. Coho survey on October 1, not at peak.

ⁱ Survey occurred before peak for chinook, sockeye and chum salmon (July 14).

Appendix C.5. Summary of historical commercial harvest by period,
Quinhagak District, chinook salmon, 1981-2000.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
12-Jun	1	-	-	-	0.0000
13-Jun	5	33	7,720	6,669	0.0505
14-Jun	2	-	5,080	2,540	0.0613
15-Jun	6	1,165	3,914	2,982	0.0970
16-Jun	5	-	7,835	1,179	0.1296
17-Jun	2	3,527	8,190	5,859	0.1546
18-Jun	6	1,942	11,997	5,710	0.2308
19-Jun	4	3,525	6,405	5,251	0.2743
20-Jun	5	746	7,341	3,031	0.3137
21-Jun	5	4,075	6,194	4,493	0.3658
22-Jun	5	3,642	10,586	4,752	0.4250
23-Jun	4	2,039	11,652	4,807	0.4746
24-Jun	7	1,403	6,698	3,476	0.5347
25-Jun	6	2,125	4,539	3,435	0.5780
26-Jun	5	1,506	3,578	1,741	0.6028
27-Jun	3	1,849	9,711	3,795	0.6355
28-Jun	5	1,438	5,468	3,283	0.6696
29-Jun	6	-	2,378	1,808	0.6897
30-Jun	5	690	4,496	1,272	0.7113
1-Jul	5	657	3,752	1,916	0.7342
2-Jul	8	1,105	3,602	1,872	0.7666
3-Jul	7	1,096	2,771	1,787	0.7940
4-Jul	5	508	4,068	1,381	0.8142
5-Jul	8	611	2,710	1,020	0.8345
6-Jul	7	273	1,670	692	0.8469
7-Jul	8	620	1,566	1,135	0.8663
8-Jul	7	465	2,407	756	0.8823
9-Jul	8	441	1,259	731	0.8952
10-Jul	5	334	956	736	0.9026
11-Jul	10	331	1,545	537	0.9186
12-Jul	4	306	687	483	0.9228
13-Jul	9	205	1,011	419	0.9327
14-Jul	9	26	1,351	438	0.9424
15-Jul	8	143	1,306	342	0.9517
16-Jul	6	196	533	311	0.9560
17-Jul	8	130	443	219	0.9602
18-Jul	6	187	845	231	0.9647
19-Jul	7	97	792	140	0.9685
20-Jul	6	89	490	265	0.9721
21-Jul	9	90	248	162	0.9753
22-Jul	6	35	629	171	0.9780
23-Jul	7	-	324	106	0.9801
24-Jul	8	33	254	94	0.9821
25-Jul	6	-	379	110	0.9838

-continued-

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
26-Jul	6	-	93	39	0.9844
27-Jul	10	-	194	91	0.9864
28-Jul	6	23	63	51	0.9870
29-Jul	8	21	116	81	0.9883
30-Jul	6	47	111	76	0.9893
31-Jul	9	-	63	35	0.9899
1-Aug	7	28	153	67	0.9910
2-Aug	8	12	53	33	0.9916
3-Aug	9	16	160	53	0.9927
4-Aug	5	-	59	30	0.9930
5-Aug	11	6	141	32	0.9941
6-Aug	7	19	78	38	0.9947
7-Aug	7	10	49	27	0.9951
8-Aug	8	-	71	19	0.9955
9-Aug	6	6	36	12	0.9957
10-Aug	9	-	125	28	0.9965
11-Aug	6	6	31	16	0.9967
12-Aug	9	12	74	18	0.9972
13-Aug	6	-	36	17	0.9975
14-Aug	9	6	29	12	0.9977
15-Aug	6	2	43	28	0.9980
16-Aug	10	1	16	8	0.9982
17-Aug	8	1	66	13	0.9985
18-Aug	8	6	13	10	0.9987
19-Aug	10	-	51	10	0.9990
20-Aug	6	6	16	9	0.9991
21-Aug	10	1	13	5	0.9992
22-Aug	6	3	33	9	0.9994
23-Aug	8	1	11	5	0.9995
24-Aug	8	1	14	4	0.9995
25-Aug	8	-	16	5	0.9996
26-Aug	9	1	17	5	0.9997
27-Aug	4	3	4	3	0.9998
28-Aug	8	2	8	4	0.9998
29-Aug	7	-	7	2	0.9999
30-Aug	3	-	9	1	0.9999
31-Aug	8	-	3	1	0.9999
1-Sep	6	-	10	1	0.9999
2-Sep	8	-	4	1	1.0000
3-Sep	5	-	2	-	1.0000
4-Sep	6	-	4	2	1.0000
5-Sep	7	-	2	1	1.0000
6-Sep	5	-	1	-	1.0000
7-Sep	8	-	-	-	1.0000
8-Sep	3	-	-	-	1.0000
9-Sep	1	-	-	-	1.0000

Appendix C.6. Summary of historical commercial harvest by period,
Quinhagak District, sockeye salmon, 1981-2000.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
12-Jun	1	0	0	0	0.0000
13-Jun	5	4	216	55	0.0005
14-Jun	2	0	384	192	0.0010
15-Jun	6	62	440	102	0.0021
16-Jun	5	0	411	150	0.0031
17-Jun	2	356	1,119	738	0.0048
18-Jun	6	117	574	449	0.0076
19-Jun	4	171	1,678	817	0.0118
20-Jun	5	111	485	367	0.0136
21-Jun	5	396	2,322	1,336	0.0222
22-Jun	5	379	1,466	762	0.0275
23-Jun	4	343	1,741	1,497	0.0335
24-Jun	7	638	3,271	1,643	0.0489
25-Jun	6	732	3,043	1,654	0.0609
26-Jun	5	805	2,777	1,863	0.0720
27-Jun	3	461	4,923	543	0.0790
28-Jun	5	1,908	10,941	2,413	0.1023
29-Jun	6	-	8,067	4,353	0.1328
30-Jun	5	1,360	9,771	2,601	0.1604
1-Jul	5	975	8,625	3,498	0.1869
2-Jul	8	1,242	10,007	2,748	0.2239
3-Jul	7	2,244	7,045	3,604	0.2581
4-Jul	5	627	8,757	5,555	0.2839
5-Jul	8	1,157	15,375	3,650	0.3297
6-Jul	7	1,126	12,133	6,045	0.3790
7-Jul	8	1,211	8,326	3,978	0.4196
8-Jul	7	1,289	9,304	6,008	0.4650
9-Jul	8	1,532	9,824	5,661	0.5159
10-Jul	5	2,229	9,894	4,622	0.5479
11-Jul	10	1,901	8,320	6,018	0.6089
12-Jul	4	1,468	6,827	4,149	0.6285
13-Jul	9	1,842	13,450	5,707	0.6940
14-Jul	9	279	7,490	3,134	0.7292
15-Jul	8	1,240	6,687	4,360	0.7678
16-Jul	6	564	8,537	3,262	0.7952
17-Jul	8	937	5,203	3,667	0.8283
18-Jul	6	657	5,842	1,388	0.8437
19-Jul	7	866	12,850	2,391	0.8744
20-Jul	6	477	4,611	2,120	0.8903
21-Jul	9	477	3,360	1,331	0.9083
22-Jul	6	799	3,537	1,305	0.9197
23-Jul	7	-	4,361	715	0.9323
24-Jul	8	215	2,610	974	0.9426
25-Jul	6	-	2,681	684	0.9496

-continued-

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
26-Jul	6	-	1,580	714	0.9552
27-Jul	10	-	2,096	476	0.9626
28-Jul	6	102	959	741	0.9670
29-Jul	8	126	997	438	0.9716
30-Jul	6	19	1,516	431	0.9756
31-Jul	9	1	730	225	0.9787
1-Aug	7	42	757	157	0.9809
2-Aug	8	38	583	189	0.9831
3-Aug	9	30	408	137	0.9850
4-Aug	5	3	442	144	0.9863
5-Aug	11	6	333	156	0.9883
6-Aug	7	16	321	143	0.9895
7-Aug	7	30	481	128	0.9911
8-Aug	8	0	198	68	0.9918
9-Aug	6	6	307	75	0.9926
10-Aug	9	10	238	38	0.9933
11-Aug	6	6	250	61	0.9940
12-Aug	9	1	200	64	0.9948
13-Aug	6	0	205	24	0.9952
14-Aug	9	1	194	34	0.9960
15-Aug	6	12	166	32	0.9963
16-Aug	10	0	161	39	0.9970
17-Aug	8	1	71	17	0.9972
18-Aug	8	6	146	32	0.9976
19-Aug	10	0	48	12	0.9978
20-Aug	6	3	97	31	0.9981
21-Aug	10	0	139	23	0.9985
22-Aug	6	1	75	12	0.9987
23-Aug	8	1	102	15	0.9989
24-Aug	8	0	52	2	0.9991
25-Aug	8	0	114	9	0.9993
26-Aug	9	0	33	5	0.9994
27-Aug	4	0	30	5	0.9995
28-Aug	8	0	68	6	0.9997
29-Aug	7	0	11	6	0.9997
30-Aug	3	0	58	0	0.9998
31-Aug	8	0	20	4	0.9998
1-Sep	6	0	32	3	0.9999
2-Sep	8	0	14	5	0.9999
3-Sep	4	0	8	1	0.9999
4-Sep	6	0	18	3	1.0000
5-Sep	7	0	16	0	1.0000
6-Sep	5	0	1	0	1.0000
7-Sep	8	0	5	0	1.0000
8-Sep	3	0	3	0	1.0000
9-Sep	1	0	0	0	1.0000

Appendix C.7. Summary of historical commercial harvest by period,
Quinhagak District, coho salmon, 1981-2000.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
12-Jun	1	0	0	0	0.0000
13-Jun	5	0	0	0	0.0000
14-Jun	2	0	0	0	0.0000
15-Jun	6	0	0	0	0.0000
16-Jun	5	0	0	0	0.0000
17-Jun	2	0	0	0	0.0000
18-Jun	6	0	0	0	0.0000
19-Jun	4	0	0	0	0.0000
20-Jun	5	0	0	0	0.0000
21-Jun	5	0	0	0	0.0000
22-Jun	5	0	0	0	0.0000
23-Jun	4	0	0	0	0.0000
24-Jun	7	0	0	0	0.0000
25-Jun	6	0	0	0	0.0000
26-Jun	5	0	0	0	0.0000
27-Jun	3	0	0	0	0.0000
28-Jun	5	0	0	0	0.0000
29-Jun	6	0	0	0	0.0000
30-Jun	5	0	2	0	0.0000
1-Jul	5	0	0	0	0.0000
2-Jul	8	0	1	0	0.0000
3-Jul	7	0	0	0	0.0000
4-Jul	5	0	0	0	0.0000
5-Jul	8	0	0	0	0.0000
6-Jul	7	0	0	0	0.0000
7-Jul	8	0	0	0	0.0000
8-Jul	7	0	0	0	0.0000
9-Jul	8	0	39	0	0.0000
10-Jul	5	0	5	0	0.0000
11-Jul	10	0	9	0	0.0001
12-Jul	4	0	2	0	0.0001
13-Jul	9	0	38	4	0.0001
14-Jul	9	0	2	0	0.0001
15-Jul	8	0	24	3	0.0002
16-Jul	6	0	39	3	0.0002
17-Jul	8	0	251	10	0.0005
18-Jul	6	1	234	11	0.0007
19-Jul	7	2	88	12	0.0009
20-Jul	6	3	787	59	0.0021
21-Jul	9	0	366	19	0.0028
22-Jul	6	1	250	27	0.0032
23-Jul	7	0	1,386	36	0.0048
24-Jul	8	21	2,295	93	0.0076
25-Jul	6	-	3,482	309	0.0117

-continued-

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
26-Jul	6	-	704	99	0.0126
27-Jul	10	-	5,512	389	0.0231
28-Jul	6	29	1,257	342	0.0259
29-Jul	8	152	7,989	639	0.0365
30-Jul	6	103	3,079	637	0.0428
31-Jul	9	146	5,597	925	0.0536
1-Aug	7	389	5,680	910	0.0638
2-Aug	8	200	12,478	2,167	0.0851
3-Aug	9	592	5,390	1,294	0.0994
4-Aug	5	168	4,293	1,755	0.1066
5-Aug	11	387	19,091	2,987	0.1443
6-Aug	7	1,589	8,436	4,206	0.1698
7-Aug	7	693	8,188	4,614	0.1991
8-Aug	8	-	19,215	2,536	0.2378
9-Aug	6	1,831	11,553	5,486	0.2695
10-Aug	9	1,237	9,428	5,430	0.3139
11-Aug	6	2,458	10,076	6,136	0.3455
12-Aug	9	2,710	10,458	3,894	0.3856
13-Aug	6	1,561	10,961	5,725	0.4156
14-Aug	9	1,671	10,424	3,543	0.4527
15-Aug	6	1,603	15,733	7,852	0.4974
16-Aug	10	1,403	8,299	2,859	0.5304
17-Aug	8	2,008	9,897	5,584	0.5700
18-Aug	8	1,008	9,776	6,564	0.6125
19-Aug	10	-	12,931	4,526	0.6571
20-Aug	6	3,958	8,728	5,540	0.6867
21-Aug	10	833	9,161	3,489	0.7224
22-Aug	6	2,493	8,437	4,582	0.7462
23-Aug	8	2,400	11,957	4,528	0.7839
24-Aug	8	765	8,673	4,565	0.8156
25-Aug	8	115	5,308	2,807	0.8336
26-Aug	9	1,419	6,505	4,552	0.8647
27-Aug	4	1,431	5,975	3,687	0.8774
28-Aug	8	1,335	4,684	3,245	0.8985
29-Aug	7	-	3,623	2,701	0.9133
30-Aug	3	1,054	9,431	2,193	0.9241
31-Aug	8	1,427	7,145	2,668	0.9452
1-Sep	6	-	2,565	1,739	0.9535
2-Sep	8	535	5,148	1,454	0.9687
3-Sep	5	-	2,777	600	0.9739
4-Sep	6	-	4,442	1,484	0.9830
5-Sep	7	-	3,799	901	0.9898
6-Sep	5	-	1,769	-	0.9923
7-Sep	8	-	3,956	305	0.9989
8-Sep	3	-	1,262	-	1.0000
9-Sep	1	0	0	0	1.0000

Appendix C.8. Summary of historical commercial harvest by period,
Quinhagak District, 1981-2000.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
12-Jun	1	-	-	-	0.0000
13-Jun	5	14	1,092	84	0.0016
14-Jun	2	-	2,125	1,063	0.0040
15-Jun	6	189	2,821	697	0.0106
16-Jun	5	-	847	279	0.0128
17-Jun	2	1,556	1,916	1,736	0.0167
18-Jun	6	290	2,611	1,623	0.0270
19-Jun	4	788	1,913	1,298	0.0330
20-Jun	5	287	2,760	746	0.0390
21-Jun	5	766	4,471	2,150	0.0510
22-Jun	5	1,051	6,984	1,531	0.0659
23-Jun	4	1,103	3,226	1,452	0.0741
24-Jun	7	732	5,990	1,500	0.0961
25-Jun	6	1,711	6,662	2,956	0.1210
26-Jun	5	1,199	4,329	2,360	0.1349
27-Jun	3	1,855	2,722	1,874	0.1422
28-Jun	5	2,458	5,449	4,559	0.1653
29-Jun	6	-	8,441	4,968	0.2001
30-Jun	5	2,066	4,903	2,501	0.2181
1-Jul	5	1,836	13,544	4,191	0.2548
2-Jul	8	1,972	6,034	3,424	0.2886
3-Jul	7	1,788	10,073	3,743	0.3278
4-Jul	5	2,333	3,155	2,839	0.3437
5-Jul	8	1,820	7,481	4,322	0.3843
6-Jul	7	2,192	8,484	4,321	0.4208
7-Jul	8	2,939	7,138	3,630	0.4578
8-Jul	7	2,845	8,296	3,672	0.4948
9-Jul	8	2,239	8,768	4,242	0.5400
10-Jul	5	4,022	5,667	5,221	0.5685
11-Jul	10	1,914	9,329	3,482	0.6174
12-Jul	4	3,211	9,074	3,803	0.6400
13-Jul	9	2,844	9,794	4,799	0.6933
14-Jul	9	134	6,668	2,084	0.7238
15-Jul	8	1,048	10,756	5,230	0.7728
16-Jul	6	1,784	4,359	2,370	0.7913
17-Jul	8	1,024	8,308	3,551	0.8278
18-Jul	6	1,310	4,343	2,806	0.8467
19-Jul	7	778	4,960	2,339	0.8678
20-Jul	6	1,590	4,684	2,806	0.8881
21-Jul	9	1,143	2,503	1,780	0.9055
22-Jul	6	990	2,696	1,740	0.9174
23-Jul	7	-	2,210	1,690	0.9291
24-Jul	8	417	2,713	1,343	0.9418
25-Jul	6	-	1,397	1,078	0.9482

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Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
26-Jul	6	-	1,460	941	0.9540
27-Jul	10	-	1,885	710	0.9622
28-Jul	6	259	975	571	0.9663
29-Jul	8	190	1,412	669	0.9727
30-Jul	6	173	802	551	0.9762
31-Jul	9	5	715	259	0.9799
1-Aug	7	246	479	334	0.9826
2-Aug	8	63	459	267	0.9850
3-Aug	9	110	580	247	0.9877
4-Aug	5	4	652	116	0.9890
5-Aug	11	59	357	174	0.9914
6-Aug	7	52	381	181	0.9929
7-Aug	7	43	260	104	0.9939
8-Aug	8	-	234	119	0.9948
9-Aug	6	11	265	105	0.9956
10-Aug	9	9	108	53	0.9961
11-Aug	6	4	110	44	0.9965
12-Aug	9	15	109	47	0.9971
13-Aug	6	2	100	36	0.9974
14-Aug	9	13	166	25	0.9980
15-Aug	6	6	106	36	0.9983
16-Aug	10	2	96	26	0.9986
17-Aug	8	-	50	15	0.9988
18-Aug	8	7	49	11	0.9990
19-Aug	10	-	54	12	0.9992
20-Aug	6	3	27	13	0.9993
21-Aug	10	2	26	10	0.9994
22-Aug	6	1	18	13	0.9995
23-Aug	8	3	27	12	0.9996
24-Aug	8	-	8	4	0.9997
25-Aug	8	-	25	5	0.9997
26-Aug	9	-	15	5	0.9998
27-Aug	4	-	6	2	0.9998
28-Aug	8	2	17	4	0.9998
29-Aug	7	-	3	-	0.9999
30-Aug	3	-	18	1	0.9999
31-Aug	8	-	10	1	0.9999
1-Sep	6	-	8	1	0.9999
2-Sep	8	-	7	1	0.9999
3-Sep	5	-	43	-	1.0000
4-Sep	6	-	13	-	1.0000
5-Sep	7	-	5	-	1.0000
6-Sep	5	-	-	-	1.0000
7-Sep	8	-	2	-	1.0000
8-Sep	3	-	-	-	1.0000
9-Sep	1	-	-	-	1.0000

Appendix D.1. Goodnews Bay District commercial effort 1970-2000.

YEAR	NUMBER OF PERIODS	FISHING HOURS ^a	EFFORT ^b
1970	28	624	35
1971	3	156	16
1972	8	186	14
1973	24	288	21
1974	30	360	49
1975	24	288	50
1976	32	384	40
1977	24	288	34
1978	36	432	35
1979	36	432	30
1980	38	456	48
1981	34	492	48
1982	34	540	48
1983	28	336	79
1984	31	372	77
1985	22	264	69
1986	30	360	86
1987	21	252	69
1988	30	360	125
1989	28	336	88
1990	28	396	82
1991	27	432	72
1992	26	396	111
1993	28	336	114
1994	32	432	116
1995	25	396	118
1996	21	247	53
1997	23	276	54
1998	29	348	50
1999	20	240	73
2000	25	300	46
Ten Year Average (1990-1999)	26	350	84

a Number of hours that fishing was open in the Goodnews Bay District.

b Permits that made at least one delivery during the year.

Appendix D.2. Historical commercial effort by salmon species caught in Goodnews District,
1975-2000.

YEAR	CHINOOK	SOCKEYE	COHO	PINK	CHUM	TOTAL
1975	37	41	35	31	41	41
1976	39	41	31	39	41	42
1977	29	34	30	13	31	35
1978	29	30	30	30	29	34
1979 ^b						30
1980	37	39	40	37	35	41
1981	43	44	44	1	41	44
1982	45	44	45	44	43	47
1983	71	68	40	0	70	72
1984	67	63	71	66	66	77
1985	63	63	52	6	63	69
1986	70	85	64	79	81	86
1987 ^b						69
1988	106	123	76	87	100	125
1989	63	82	83	41	66	88
1990	71	82	42	41	81	82
1991	57	67	52	0	62	72
1992	85	111	53	104	106	111
1993	102	113	56	0	110	114
1994	106	116	44	105	115	116
1995	100	118	49	24	108	118
1996	46	53	32	1	53	53
1997	52	54	27	0	52	54
1998	49	50	33	26	50	50
1999	63	73	29	0	71	73
2000	40	46	36	2	42	46
Ten Year Average (90-99)	73	84	42	55 ^a	81	84

a Average of even years only.

b Catch by permit unavailable.

Appendix D.3. Goodnews Bay District commercial salmon harvest, 1968-2000.

YEAR	CHINOOK	SOCKEYE	COHO	PINK	CHUM	TOTAL
1968			5,458			5,458
1969	3,978	6,256	11,631	298	5,006	27,169
1970	7,163	7,144	6,794	12,183	12,346	45,630
1971	477	330	1,771	0	301	2,879
1972	264	924	925	66	1,331	3,510
1973	3,543	2,072	5,017	324	15,781	26,737
1974	3,302	9,357	21,340	16,373	8,942	59,314
1975	2,156	9,098	17,889	419	5,904	35,466
1976	4,417	5,575	9,852	8,453	10,354	38,651
1977	3,336	3,723	13,335	29	6,531	26,954
1978	5,218	5,412	13,764	9,103	8,590	42,087
1979	3,204	19,581	42,098	201	9,298	74,382
1980	2,331	28,632	43,256	7,832	11,748	93,799
1981	7,190	40,273	19,749	11	13,642	80,865
1982	9,476	38,877	46,683	4,673	13,829	113,538
1983	14,117	11,716	19,660	0	6,766	52,259
1984	8,612	15,474	71,176	4,711	14,340	114,313
1985	5,793	6,698	16,498	8	4,784	33,781
1986	2,723	25,112	19,378	4,447	10,355	62,015
1987	3,357	27,758	29,057	54	20,381	80,607
1988	4,964	36,368	30,832	5,509	33,059	110,732
1989	2,966	19,299	31,849	82	13,622	67,818
1990	3,303	35,823	7,804	629	13,194	60,753
1991	912	39,838	13,312	29	15,892	69,983
1992	3,528	39,194	19,875	14,310	18,520	95,427
1993	2,117	59,293	20,014	0	10,657	92,081
1994	2,570	69,490	47,499	18,017	28,477	166,053
1995	2,922	37,351	17,875	39	19,832	78,019
1996	1,375	30,717	43,836	22	11,093	87,043
1997	2,039	31,451	2,983	0	11,729	48,202
1998	3,675	27,161	21,246	411	14,155	66,648
1999	1,888	22,910	2,474	0	11,562	38,834
2000	4,442	37,252	15,531	7	7,450	64,682
Ten Year						
Average	2,433	39,322	19,690	3,699 ^a	15,511	80,656
(90 – 99)						

a Average of even years only

Appendix D.4. Historical estimated salmon run size and commercial exploitation rate, Goodnews River, 1981-2000.

Year	Species	Middle Fork Tower/Weir Estimate	Middle Fork Aerial Survey Count as a Percentage of Weir Est.	North Fork Goodnews River Escapement Estimate	Goodnews Bay Subsistence Harvest Estimate	Goodnews Bay Commercial Harvest	Total Run Size Estimate	Exploitation ^a Rate (% of Run)
1981	Chinook	3,688	-b	7,766 ^c	1,409	7,190	20,053	43
	Sockeye	49,108	-b	100,029 ^c	3,511 ^d	40,273	192,921	23
	Chum	21,827	-b	53,799 ^c	-	13,642	89,268	15
1982	Chinook	1,395	-b	2,937 ^c	1,236	9,476	15,044	71
	Sockeye	56,255	-b	114,587 ^c	2,754 ^d	38,877	212,473	20
	Chum	6,767	-b	16,679 ^c	-	13,829	37,275	37
1983	Chinook	6,022	36	14,398	1,066	14,117	35,603	43
	Sockeye	25,813	22	69,955	1,518 ^d	11,716	109,002	12
	Chum	15,548	-b	38,323 ^c	-	6,766	60,637	11
1984	Chinook	3,260	35	8,743	629	8,612	21,244	43
	Sockeye	32,053	27	67,213	964	15,474	115,704	14
	Chum	19,003	35	117,739	189	14,340	151,271	10
1985	Chinook	2,831	70	7,979	426	5,793	17,029	37
	Sockeye	24,131	11	50,481	704	6,698	82,014	9
	Chum	10,367	32	25,025	348	4,784	40,524	13
1986	Chinook	2,092	57	4,094	555	2,723	9,464	35
	Sockeye	51,069	28	93,228	942	25,112	170,351	15
	Chum	14,764	38	51,910	191	10,355	77,220	14
1987	Chinook	2,272	100	4,490	816	3,357	10,935	38
	Sockeye	28,871	85	51,989	955	27,758	109,573	26
	Chum	17,517	58	37,802	578	20,381	76,278	27
1988	Chinook	2,712	39	5,419	310	4,964	13,405	39
	Sockeye	15,799	30	38,319	1065	36,368	91,551	41
	Chum	20,799	21	39,501	448	33,059	93,807	36
1989	Chinook	1,915	67	2,891	467	2,966	8,239	42
	Sockeye	21,186	60	35,476	869	19,299	76,830	26
	Chum	10,380	28	15,495	760	13,622	40,257	36
1990	Chinook	3,636	-b	7,656 ^c	682	3,303	15,277	26
	Sockeye	31,679	-b	64,528 ^c	905	35,823	132,935	28
	Chum	6,410	-b	15,799 ^c	342	13,194	35,745	38
1991 ^e	Chinook	1,952	-b	4,521 ^c	682	912	8,067	20
	Sockeye	47,397	-b	96,544 ^c	900	39,838	184,679	22
	Chum	27,525	-b	67,844 ^c	106	15,892	111,367	14
1992	Chinook	1,903	61	1,854	252	3,528	7,537	50
	Sockeye	27,268	21	52,501	905	39,194	119,868	33
	Chum	22,023	19	16,084	662	18,520	57,289	33
1993	Chinook	2,349	-b	4,727 ^c	488	2,117	9,681	27
	Sockeye	26,452	-b	54,325 ^c	572	59,293	140,642	43
	Chum	14,952	-b	38,061 ^c	133	10,657	63,803	17

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Year	Species	Middle Fork Tower/Weir Estimate	Middle Fork Aerial Survey Count as a Percentage of Weir Est.	North Fork Goodnews River Escapement Estimate	Goodnews Bay Subsistence Harvest Estimate	Goodnews Bay Commercial Harvest	Total Run Size Estimate	Exploitation ^a Rate (% of Run)
1994	Chinook	3,856	-b	7,866 ^c	657	2,570	14,949	22
	Sockeye	55,751	-b	115,405 ^c	652	69,490	241,298	29
	Chum	34,849	-b	91,653 ^c	402	28,477	155,381	19
1995	Chinook	4,836	-b	9,865 ^c	552	2,922	18,175	19
	Sockeye	39,009	-b	80,749 ^c	787	37,351	157,896	24
	Chum	33,699	-b	88,628 ^c	329	19,832	142,488	14
1996	Chinook	2,930	-b	5,977 ^c	526	1,375	10,808	18
	Sockeye	58,264	-b	120,606 ^c	763	30,717	210,350	15
	Chum	40,450	-b	106,384 ^c	326	11,093	158,253	7
1997	Chinook	2,937	51	7,216	449	2,039	12,641	20
	Sockeye	35,530	57	23,462	609	31,451	91,052	35
	Chum	17,296	-b	45,488 ^c	133	11,729	74,646	16
1998	Chinook	4,584	18	3,797	718	3,675	12,774	34
	Sockeye	47,951	25	14,693	508	27,161	90,313	31
	Chum	28,905	15	24,940	316	14,155	68,316	21
1999	Chinook	3,221	-b	6,565 ^c	871	1,888	12,545	22
	Sockeye	48,205	-b	99,727 ^c	872	22,910	171,714	14
	Chum	19,533	-b	51,361 ^c	281	11,562	82,737	14
2000	Chinook	3,295	-b	6,458 ^c	703	4,442	14,898	35
	Sockeye	42,197	-b	73,845 ^c	1,205	37,252	154,499	25
	Chum	14,720	-b	35,475 ^c	364	7,450	58,009	13

a Commercial and subsistence exploitation.

b Incomplete aerial survey results.

c Average Middle Fork/Goodnews River escapement estimate ratio for 1983-1989 used to estimate Goodnews River escapement in years with no aerial survey data. After 1992, that year is included in the estimate ratio also.

d Subsistence caught chum salmon is included in subsistence sockeye salmon harvest.

e Goodnews Tower Project changed to weir project in 1991.

Appendix D.5. Aerial survey results, Goodnews River 1980-2000.

Year	Goodnews River and Lake				Middle Fork Goodnews River and Lakes			
	Chinook	Sockeye	Chum	Coho	Chinook	Sockeye	Chum	Coho
1980	1,228	75,639	1,975		1,164	18,926	3,782	
1981	a	a	a		a	a	a	
1982	1,990	19,160	9,700		1,546	2,327	6,300	
1983	2,600	9,650	a		2,500	5,900	a	
1984	3,245	9,240	17,250	43,925	1,930	12,897	9,172	
1985	3,535	2,843	4,415		2,050	5,470	3,593	
1986	1,068	8,960	11,850		1,249	16,990	7,645	
1987	2,234	19,786	12,103	11,122	2,222	34,585	9,696	
1988	637	5,820	3,846		1,024	5,831	5,814	
1989	651	3,605	a		1,277	8,044	2,922	
1990	626	27,689	a		a	a	a	
1991 ^b	a	a	a		a	a	a	
1992	875	10,397	1,950		1,012	7,200	3,270	
1993	a	a	a		a	a	a	
1994	a	a	a		a	a	a	
1995	3,314	a	a		a	a	a	
1996	a	a	a		a	a	a	
1997	3,611	12,610	a		1,447	19,843	a	
1998	578	3,497	2,743		731	11,632	3,619	
1999	a	a	a		a	a	a	
2000	a	a	a		a	a	a	
Escapement Objective ^c	1,600	15,000	17,000	800	800	5,000	4,000	20,000

a Information not available.

b Survey past peak.

c Escapement objectives are preliminary and are subject to change as additional data becomes available. Escapement objectives are based on aerial index counts, which do not represent total escapement, but do reflect annual spawner abundance trends when made using standard survey methods under acceptable survey conditions.

Appendix D.6. Historical salmon escapement at the Middle Fork Goodnews River project, 1981-2000.

Year	Operating period ^a	Chinook	Sockeye	Coho ^b	Pink	Chum
1981	June 13 – Aug 15	3,688	49,108	357	1,327	21,827
1982	June 23 – Aug 03	1,395	56,255	62	13,855	6,767
1983	June 11 – July 28	6,027	25,813	0	34	15,548
1984	June 15 – July 31	3,260	32,053	249	13,744	19,003
1985	June 27 – July 31	2,831	24,131	282	144	10,367
1986	June 16 – July 24	2,080	51,069	163	8,133	14,764
1987	June 22 – July 30	2,272	28,871	62	62	17,517
1988	June 23 – July 30	2,712	15,799	6	6,781	20,799
1989	June 29 – July 31	1,915	21,186	145	246	10,380
1990	June 20 – July 24	3,636	31,679	0	3,378	6,410
1991	June 29 – Aug 25	1,952	47,397	1,978	1,694	27,525
1992	June 21 – Aug 16	1,903	27,267		23,030	22,023
1993	June 22 – Aug 18	2,349	26,452	1,451	318	14,952
1994	June 22 – Aug 16	3,856	55,751		38,705	34,849
1995	June 19 – Aug 28	4,836	39,009	5,415	330	33,669
1996	June 18 – Aug 23	2,882	57,504	10,869	20,105	40,125
1997	June 12 – Sept 17	2,937	35,530	9,619	940	17,296
1998	July 04 – Sept 17	4,584	47,951	35,441	10,376	28,905
1999	June 25 – Sept 26	3,221	48,205	11,545	914	19,533
2000	July 02 – Sept 22	3,295	42,197	19,676	2,530	14,720

In years where the project was initiated later than normal or during times the weir was not operational, interpolation was used to estimate escapement for the time period missed (see Appendix D.7.).

^b The coho escapement continues into October and the majority of the run was not counted (except in 1997, 1998, 1999 and 2000). No interpolation was attempted in 1992 or 1994 because of flooding.

Appendix D.7. Percentage of salmon escapement estimated at the Middle Fork Goodnews River project, 1991-2000.

Year	Operating period ^a	Chinook	Sockeye	Coho ^b	Pink	Chum
1991	June 29 – Aug 25	0	15	0	0	2
1992	June 21 – Aug 16	29	43	0	3	15
1993	June 22 – Aug 18	14	22	0	0	8
1994	June 22 – Aug 16	20	16	0	0	20
1995	June 19 – Aug 28	0	0	0	0	0
1996	June 18 – Aug 23	26	24	11	28	27
1997	June 12 – Sept 17	2	1	0	0	8
1998	July 04 – Sept 17	32	32	3	0	11
1999	June 25 – Sept 26	0	0	0	0	0
2000	July 02 – Sept 22	24	23	0	0	6

^a Estimates were made for some species when the weir was not operational from June 15 through August 16. Previous to 1991 the project was a counting tower and the majority of the escapement was estimated based on a systematic counting schedule.

^b The coho escapement continues into October and the majority of the run was not counted (except in 1997, 1998, 1999, and 2000). In 1999 the weir was out for 10 days in early August because of flooding.

Appendix D.8. Summary of historical commercial harvest by period,
Goodnews District, chinook salmon, 1981-2000.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
12-Jun	0	-	-	-	0.0000
13-Jun	1	1,252	1,252	1,252	0.0142
14-Jun	0	-	-	-	0.0142
15-Jun	1	197	197	197	0.0165
16-Jun	2	251	1,096	674	0.0318
17-Jun	1	362	362	362	0.0359
18-Jun	3	387	1,706	1,158	0.0729
19-Jun	2	296	390	343	0.0807
20-Jun	5	139	2,642	404	0.1283
21-Jun	2	1,298	1,535	1,417	0.1605
22-Jun	2	792	1,591	1,192	0.1876
23-Jun	3	583	1,639	788	0.2218
24-Jun	3	476	988	620	0.2455
25-Jun	4	340	1,896	1,154	0.2972
26-Jun	4	-	1,247	384	0.3201
27-Jun	5	173	3,944	388	0.3938
28-Jun	5	307	1,307	807	0.4387
29-Jun	5	330	1,857	914	0.4896
30-Jun	7	242	1,551	460	0.5436
1-Jul	2	77	1,156	617	0.5577
2-Jul	9	166	710	318	0.5977
3-Jul	5	156	1,065	391	0.6244
4-Jul	3	177	2,301	637	0.6598
5-Jul	8	95	1,809	290	0.7029
6-Jul	6	100	496	239	0.7196
7-Jul	10	132	1,119	334	0.7735
8-Jul	9	93	495	190	0.7973
9-Jul	7	99	351	143	0.8138
10-Jul	5	156	326	203	0.8265
11-Jul	9	53	408	162	0.8447
12-Jul	5	107	737	313	0.8632
13-Jul	7	65	182	126	0.8721
14-Jul	8	54	514	154	0.8902
15-Jul	8	-	354	84	0.9005
16-Jul	8	54	294	85	0.9108
17-Jul	5	41	210	76	0.9171
18-Jul	7	-	217	71	0.9233
19-Jul	6	-	71	47	0.9263
20-Jul	7	38	192	84	0.9346
21-Jul	8	24	68	51	0.9391
22-Jul	4	19	228	66	0.9434
23-Jul	9	17	97	38	0.9478
24-Jul	6	20	77	40	0.9507
25-Jul	8	-	82	27	0.9537

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Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
26-Jul	6	-	41	21	0.9551
27-Jul	9	19	122	32	0.9605
28-Jul	7	5	22	14	0.9617
29-Jul	6	15	157	29	0.9649
30-Jul	8	16	73	19	0.9674
31-Jul	6	7	34	20	0.9687
1-Aug	8	-	78	18	0.9714
2-Aug	8	-	27	17	0.9728
3-Aug	9	9	102	24	0.9768
4-Aug	6	3	23	10	0.9776
5-Aug	9	4	54	17	0.9796
6-Aug	7	4	79	9	0.9810
7-Aug	5	8	43	15	0.9821
8-Aug	9	-	60	13	0.9837
9-Aug	5	7	21	11	0.9845
10-Aug	11	5	78	14	0.9871
11-Aug	6	5	20	8	0.9878
12-Aug	8	4	47	15	0.9895
13-Aug	6	-	36	5	0.9902
14-Aug	9	2	41	8	0.9914
15-Aug	6	5	26	11	0.9923
16-Aug	10	-	17	6	0.9931
17-Aug	7	2	22	7	0.9939
18-Aug	9	-	10	6	0.9945
19-Aug	7	3	14	8	0.9951
20-Aug	6	1	12	7	0.9956
21-Aug	10	-	11	5	0.9961
22-Aug	6	3	17	8	0.9967
23-Aug	5	-	9	6	0.9970
24-Aug	8	-	17	2	0.9974
25-Aug	7	-	13	4	0.9979
26-Aug	9	-	8	4	0.9982
27-Aug	5	-	13	3	0.9985
28-Aug	9	-	11	3	0.9988
29-Aug	6	2	9	4	0.9991
30-Aug	4	1	4	2	0.9992
31-Aug	8	-	6	1	0.9994
1-Sep	6	-	7	1	0.9995
2-Sep	7	-	5	2	0.9996
3-Sep	5	-	3	2	0.9997
4-Sep	5	-	6	1	0.9999
5-Sep	6	-	5	1	1.0000
6-Sep	3	-	-	-	1.0000
7-Sep	8	-	1	-	1.0000
8-Sep	4	-	2	-	1.0000
9-Sep	1	-	-	-	1.0000

Appendix D.9. Summary of historical commercial harvest by period,
Goodnews District, sockeye salmon, 1981-2000.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
12-Jun	0	-	-	-	0.0000
13-Jun	1	27	27	27	0.0000
14-Jun	0	-	-	-	0.0000
15-Jun	1	70	70	70	0.0001
16-Jun	2	125	696	411	0.0014
17-Jun	1	744	744	744	0.0026
18-Jun	3	281	596	348	0.0044
19-Jun	2	478	551	515	0.0060
20-Jun	5	102	1,989	523	0.0114
21-Jun	2	967	1,280	1,124	0.0149
22-Jun	2	569	1,074	822	0.0174
23-Jun	3	1,029	2,701	1,466	0.0254
24-Jun	3	596	2,120	1,892	0.0325
25-Jun	4	852	2,087	1,348	0.0411
26-Jun	4	-	1,984	1,814	0.0497
27-Jun	5	685	3,040	1,664	0.0637
28-Jun	5	2,008	4,163	2,932	0.0861
29-Jun	5	1,412	3,552	2,104	0.1042
30-Jun	7	2,037	8,143	4,651	0.1541
1-Jul	2	1,143	3,376	2,260	0.1610
2-Jul	9	1,818	8,198	3,021	0.2126
3-Jul	5	1,427	5,510	2,589	0.2383
4-Jul	3	1,598	7,674	2,154	0.2559
5-Jul	8	1,254	5,195	2,854	0.2948
6-Jul	6	2,346	7,886	3,391	0.3348
7-Jul	10	2,057	6,283	3,654	0.3915
8-Jul	9	1,231	6,261	4,362	0.4455
9-Jul	7	2,167	4,518	3,566	0.4830
10-Jul	5	1,759	8,140	3,217	0.5148
11-Jul	9	1,397	3,898	3,247	0.5557
12-Jul	5	1,444	16,753	2,762	0.5991
13-Jul	7	1,954	5,275	2,785	0.6362
14-Jul	8	1,039	4,876	2,891	0.6700
15-Jul	8	-	8,860	2,791	0.7063
16-Jul	8	902	4,969	1,940	0.7351
17-Jul	5	1,598	3,936	2,978	0.7565
18-Jul	7	-	3,049	1,673	0.7723
19-Jul	6	-	2,830	1,917	0.7881
20-Jul	7	395	3,852	1,679	0.8091
21-Jul	8	507	2,559	1,309	0.8274
22-Jul	4	614	2,207	1,830	0.8373
23-Jul	9	162	3,966	874	0.8549
24-Jul	6	588	2,458	1,304	0.8681
25-Jul	8	-	1,678	472	0.8771

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Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
26-Jul	6	-	1,804	908	0.8859
27-Jul	9	166	2,903	534	0.8989
28-Jul	7	254	1,743	555	0.9060
29-Jul	6	342	1,312	720	0.9135
30-Jul	8	84	1,982	384	0.9219
31-Jul	6	300	1,180	524	0.9276
1-Aug	8	-	811	258	0.9312
2-Aug	8	-	969	296	0.9366
3-Aug	9	36	975	578	0.9442
4-Aug	6	59	739	189	0.9465
5-Aug	9	94	932	308	0.9524
6-Aug	7	34	498	251	0.9552
7-Aug	5	138	692	382	0.9584
8-Aug	9	-	926	260	0.9627
9-Aug	5	46	485	135	0.9642
10-Aug	11	18	659	286	0.9697
11-Aug	6	-	174	90	0.9705
12-Aug	8	17	564	263	0.9739
13-Aug	6	-	347	158	0.9752
14-Aug	9	4	409	234	0.9784
15-Aug	6	5	422	160	0.9802
16-Aug	10	-	395	110	0.9826
17-Aug	7	4	498	151	0.9845
18-Aug	9	-	318	96	0.9860
19-Aug	7	5	360	117	0.9875
20-Aug	6	-	214	118	0.9884
21-Aug	10	1	373	93	0.9905
22-Aug	6	7	353	118	0.9916
23-Aug	5	-	193	88	0.9923
24-Aug	8	1	298	57	0.9937
25-Aug	7	-	353	89	0.9948
26-Aug	9	-	204	66	0.9956
27-Aug	5	-	148	28	0.9961
28-Aug	9	1	186	51	0.9969
29-Aug	6	1	155	54	0.9975
30-Aug	4	-	171	36	0.9979
31-Aug	8	-	88	51	0.9984
1-Sep	6	-	158	47	0.9989
2-Sep	7	2	69	36	0.9993
3-Sep	5	-	72	21	0.9995
4-Sep	5	-	61	19	0.9997
5-Sep	6	-	61	-	0.9998
6-Sep	3	-	-	-	0.9998
7-Sep	8	-	63	3	1.0000
8-Sep	4	-	-	-	1.0000
9-Sep	1	-	-	-	1.0000

Appendix D.10. Summary of historical commercial harvest by period, Goodnews District, coho salmon, 1981-2000.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
12-Jun	0	-	-	-	0.0000
13-Jun	1	-	-	-	0.0000
14-Jun	0	-	-	-	0.0000
15-Jun	1	-	-	-	0.0000
16-Jun	2	-	-	-	0.0000
17-Jun	1	-	-	-	0.0000
18-Jun	3	-	-	-	0.0000
19-Jun	2	-	-	-	0.0000
20-Jun	5	-	-	-	0.0000
21-Jun	2	-	-	-	0.0000
22-Jun	2	-	-	-	0.0000
23-Jun	3	-	-	-	0.0000
24-Jun	3	-	-	-	0.0000
25-Jun	4	-	-	-	0.0000
26-Jun	4	-	-	-	0.0000
27-Jun	5	-	-	-	0.0000
28-Jun	5	-	-	-	0.0000
29-Jun	5	-	-	-	0.0000
30-Jun	7	-	-	-	0.0000
1-Jul	2	-	-	-	0.0000
2-Jul	9	-	-	-	0.0000
3-Jul	5	-	-	-	0.0000
4-Jul	3	-	-	-	0.0000
5-Jul	8	-	-	-	0.0000
6-Jul	6	-	-	-	0.0000
7-Jul	10	-	-	-	0.0000
8-Jul	9	-	-	-	0.0000
9-Jul	7	-	-	-	0.0000
10-Jul	5	-	-	-	0.0000
11-Jul	9	-	-	-	0.0000
12-Jul	5	-	1	-	0.0000
13-Jul	7	-	-	-	0.0000
14-Jul	8	-	1	-	0.0000
15-Jul	8	-	13	-	0.0000
16-Jul	8	-	18	1	0.0001
17-Jul	5	-	-	-	0.0001
18-Jul	7	-	18	-	0.0001
19-Jul	6	-	11	-	0.0002
20-Jul	7	-	111	1	0.0004
21-Jul	8	-	18	4	0.0005
22-Jul	4	-	4	1	0.0005
23-Jul	9	1	195	13	0.0011
24-Jul	6	-	33	11	0.0012
25-Jul	8	-	632	52	0.0039

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Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
26-Jul	6	-	65	5	0.0040
27-Jul	9	-	1,059	68	0.0082
28-Jul	7	3	153	5	0.0090
29-Jul	6	5	343	47	0.0101
30-Jul	8	1	1,461	178	0.0170
31-Jul	6	24	364	100	0.0189
1-Aug	8	-	2,811	119	0.0262
2-Aug	8	-	1,491	107	0.0339
3-Aug	9	66	3,943	165	0.0464
4-Aug	6	2	949	419	0.0518
5-Aug	9	126	2,069	593	0.0650
6-Aug	7	23	4,275	458	0.0814
7-Aug	5	231	881	755	0.0878
8-Aug	9	97	3,090	1,133	0.1122
9-Aug	5	108	2,240	891	0.1241
10-Aug	11	463	4,198	1,340	0.1620
11-Aug	6	127	6,065	1,241	0.1849
12-Aug	8	1,225	6,488	1,920	0.2237
13-Aug	6	673	4,852	1,593	0.2489
14-Aug	9	1,325	4,644	2,354	0.2927
15-Aug	6	735	5,999	2,117	0.3259
16-Aug	10	336	7,321	1,947	0.3777
17-Aug	7	1,390	6,880	3,002	0.4264
18-Aug	9	-	3,864	1,446	0.4568
19-Aug	7	1,394	5,628	3,397	0.5050
20-Aug	6	68	9,590	1,675	0.5377
21-Aug	10	968	4,967	1,897	0.5835
22-Aug	6	629	6,731	3,556	0.6288
23-Aug	5	1,308	5,306	3,417	0.6620
24-Aug	8	1,591	5,520	3,407	0.7142
25-Aug	7	468	3,590	1,739	0.7419
26-Aug	9	15	3,249	1,918	0.7752
27-Aug	5	1,101	6,625	2,519	0.8053
28-Aug	9	1,016	3,529	1,896	0.8403
29-Aug	6	725	3,402	1,747	0.8631
30-Aug	4	1,483	3,730	1,986	0.8815
31-Aug	8	1,084	3,143	1,713	0.9138
1-Sep	6	604	2,778	1,415	0.9325
2-Sep	7	576	3,233	1,484	0.9536
3-Sep	5	377	2,309	1,167	0.9660
4-Sep	5	374	2,685	1,044	0.9787
5-Sep	6	-	2,202	684	0.9879
6-Sep	3	-	1,715	-	0.9914
7-Sep	8	-	2,310	221	1.0000
8-Sep	4	-	-	-	1.0000
9-Sep	1	-	-	-	1.0000

Appendix D.11. Summary of historical commercial harvest by period,
Goodnews District, chum salmon, 1981-2000.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
12-Jun	0	-	-	-	0.0000
13-Jun	1	10	10	10	0.0000
14-Jun	0	-	-	-	0.0000
15-Jun	1	102	102	102	0.0004
16-Jun	2	89	1,091	590	0.0044
17-Jun	1	167	167	167	0.0050
18-Jun	3	194	501	254	0.0082
19-Jun	2	249	557	403	0.0109
20-Jun	5	137	3,501	341	0.0265
21-Jun	2	591	698	645	0.0309
22-Jun	2	708	2,124	1,416	0.0406
23-Jun	3	886	7,833	886	0.0733
24-Jun	3	594	1,188	821	0.0822
25-Jun	4	724	2,351	1,580	0.1034
26-Jun	4	-	1,241	1,020	0.1146
27-Jun	5	540	2,364	728	0.1319
28-Jun	5	526	8,369	1,605	0.1766
29-Jun	5	425	2,983	1,242	0.2013
30-Jun	7	997	2,907	1,627	0.2410
1-Jul	2	710	850	780	0.2463
2-Jul	9	565	3,434	2,208	0.3040
3-Jul	5	1,222	3,074	2,485	0.3402
4-Jul	3	798	4,075	1,626	0.3623
5-Jul	8	927	3,193	1,521	0.4061
6-Jul	6	634	4,076	1,331	0.4426
7-Jul	10	1,036	4,478	1,850	0.5101
8-Jul	9	949	2,669	1,837	0.5639
9-Jul	7	1,024	2,503	1,356	0.5988
10-Jul	5	1,346	4,835	2,063	0.6395
11-Jul	9	444	5,830	1,009	0.6867
12-Jul	5	1,057	5,498	1,501	0.7250
13-Jul	7	483	2,288	1,361	0.7571
14-Jul	8	601	2,123	1,154	0.7925
15-Jul	8	-	3,296	1,184	0.8295
16-Jul	8	476	1,360	1,099	0.8553
17-Jul	5	201	2,115	1,532	0.8776
18-Jul	7	-	1,191	649	0.8926
19-Jul	5	270	1,470	506	0.9068
20-Jul	7	479	1,265	657	0.9259
21-Jul	8	225	820	409	0.9378
22-Jul	4	307	1,177	335	0.9451
23-Jul	9	35	591	301	0.9556
24-Jul	6	133	874	280	0.9627
25-Jul	8	-	281	217	0.9679

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Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
26-Jul	6	-	608	151	0.9720
27-Jul	9	58	177	138	0.9762
28-Jul	7	41	94	89	0.9782
29-Jul	6	32	223	119	0.9806
30-Jul	8	42	124	96	0.9830
31-Jul	6	8	121	66	0.9844
1-Aug	8	-	108	56	0.9857
2-Aug	8	-	153	76	0.9878
3-Aug	9	22	105	52	0.9895
4-Aug	6	10	60	33	0.9902
5-Aug	9	21	165	36	0.9919
6-Aug	7	18	47	29	0.9926
7-Aug	5	13	62	16	0.9930
8-Aug	9	-	60	20	0.9937
9-Aug	5	13	63	39	0.9943
10-Aug	11	2	44	16	0.9951
11-Aug	6	10	25	14	0.9954
12-Aug	8	-	174	15	0.9964
13-Aug	6	2	22	7	0.9966
14-Aug	9	3	90	15	0.9975
15-Aug	6	-	23	9	0.9977
16-Aug	10	-	16	9	0.9979
17-Aug	7	-	22	7	0.9981
18-Aug	9	-	11	3	0.9983
19-Aug	7	2	16	5	0.9984
20-Aug	6	-	11	4	0.9985
21-Aug	10	-	127	2	0.9990
22-Aug	6	2	6	4	0.9991
23-Aug	5	-	8	4	0.9992
24-Aug	8	-	8	1	0.9992
25-Aug	7	-	8	4	0.9993
26-Aug	9	-	42	-	0.9995
27-Aug	5	-	5	2	0.9996
28-Aug	9	-	11	1	0.9996
29-Aug	6	-	6	4	0.9997
30-Aug	4	-	2	1	0.9997
31-Aug	8	-	9	3	0.9998
1-Sep	6	-	2	1	0.9998
2-Sep	7	-	10	2	0.9999
3-Sep	5	-	4	-	0.9999
4-Sep	5	-	9	2	1.0000
5-Sep	6	-	4	1	1.0000
6-Sep	3	-	-	-	1.0000
7-Sep	8	-	2	-	1.0000
8-Sep	4	-	-	-	1.0000
9-Sep	1	-	-	-	1.0000

TABLE 1. Summary of the data used in the analysis of the effect of the treatment on the response of the subjects to the treatment.

Subject	Baseline		Post-treatment		Follow-up		Total	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	10.5	1.2	11.2	1.5	10.8	1.1	10.8	1.1
2	11.2	1.5	12.0	1.8	11.5	1.4	11.5	1.4
3	12.0	1.8	13.0	2.0	12.5	1.6	12.5	1.6
4	13.0	2.0	14.0	2.2	13.5	1.8	13.5	1.8
5	14.0	2.2	15.0	2.5	14.5	2.0	14.5	2.0
6	15.0	2.5	16.0	2.8	15.5	2.2	15.5	2.2
7	16.0	2.8	17.0	3.0	16.5	2.4	16.5	2.4
8	17.0	3.0	18.0	3.2	17.5	2.6	17.5	2.6
9	18.0	3.2	19.0	3.5	18.5	2.8	18.5	2.8
10	19.0	3.5	20.0	3.8	19.5	3.0	19.5	3.0
11	20.0	3.8	21.0	4.0	20.5	3.2	20.5	3.2
12	21.0	4.0	22.0	4.2	21.5	3.4	21.5	3.4
13	22.0	4.2	23.0	4.5	22.5	3.6	22.5	3.6
14	23.0	4.5	24.0	4.8	23.5	3.8	23.5	3.8
15	24.0	4.8	25.0	5.0	24.5	4.0	24.5	4.0
16	25.0	5.0	26.0	5.2	25.5	4.2	25.5	4.2
17	26.0	5.2	27.0	5.5	26.5	4.4	26.5	4.4
18	27.0	5.5	28.0	5.8	27.5	4.6	27.5	4.6
19	28.0	5.8	29.0	6.0	28.5	4.8	28.5	4.8
20	29.0	6.0	30.0	6.2	29.5	5.0	29.5	5.0
21	30.0	6.2	31.0	6.5	30.5	5.2	30.5	5.2
22	31.0	6.5	32.0	6.8	31.5	5.4	31.5	5.4
23	32.0	6.8	33.0	7.0	32.5	5.6	32.5	5.6
24	33.0	7.0	34.0	7.2	33.5	5.8	33.5	5.8
25	34.0	7.2	35.0	7.5	34.5	6.0	34.5	6.0
26	35.0	7.5	36.0	7.8	35.5	6.2	35.5	6.2
27	36.0	7.8	37.0	8.0	36.5	6.4	36.5	6.4
28	37.0	8.0	38.0	8.2	37.5	6.6	37.5	6.6
29	38.0	8.2	39.0	8.5	38.5	6.8	38.5	6.8
30	39.0	8.5	40.0	8.8	39.5	7.0	39.5	7.0
31	40.0	8.8	41.0	9.0	40.5	7.2	40.5	7.2
32	41.0	9.0	42.0	9.2	41.5	7.4	41.5	7.4
33	42.0	9.2	43.0	9.5	42.5	7.6	42.5	7.6
34	43.0	9.5	44.0	9.8	43.5	7.8	43.5	7.8
35	44.0	9.8	45.0	10.0	44.5	8.0	44.5	8.0
36	45.0	10.0	46.0	10.2	45.5	8.2	45.5	8.2
37	46.0	10.2	47.0	10.5	46.5	8.4	46.5	8.4
38	47.0	10.5	48.0	10.8	47.5	8.6	47.5	8.6
39	48.0	10.8	49.0	11.0	48.5	8.8	48.5	8.8
40	49.0	11.0	50.0	11.2	49.5	9.0	49.5	9.0
41	50.0	11.2	51.0	11.5	50.5	9.2	50.5	9.2
42	51.0	11.5	52.0	11.8	51.5	9.4	51.5	9.4
43	52.0	11.8	53.0	12.0	52.5	9.6	52.5	9.6
44	53.0	12.0	54.0	12.2	53.5	9.8	53.5	9.8
45	54.0	12.2	55.0	12.5	54.5	10.0	54.5	10.0
46	55.0	12.5	56.0	12.8	55.5	10.2	55.5	10.2
47	56.0	12.8	57.0	13.0	56.5	10.4	56.5	10.4
48	57.0	13.0	58.0	13.2	57.5	10.6	57.5	10.6
49	58.0	13.2	59.0	13.5	58.5	10.8	58.5	10.8
50	59.0	13.5	60.0	13.8	59.5	11.0	59.5	11.0
51	60.0	13.8	61.0	14.0	60.5	11.2	60.5	11.2
52	61.0	14.0	62.0	14.2	61.5	11.4	61.5	11.4
53	62.0	14.2	63.0	14.5	62.5	11.6	62.5	11.6
54	63.0	14.5	64.0	14.8	63.5	11.8	63.5	11.8
55	64.0	14.8	65.0	15.0	64.5	12.0	64.5	12.0
56	65.0	15.0	66.0	15.2	65.5	12.2	65.5	12.2
57	66.0	15.2	67.0	15.5	66.5	12.4	66.5	12.4
58	67.0	15.5	68.0	15.8	67.5	12.6	67.5	12.6
59	68.0	15.8	69.0	16.0	68.5	12.8	68.5	12.8
60	69.0	16.0	70.0	16.2	69.5	13.0	69.5	13.0
61	70.0	16.2	71.0	16.5	70.5	13.2	70.5	13.2
62	71.0	16.5	72.0	16.8	71.5	13.4	71.5	13.4
63	72.0	16.8	73.0	17.0	72.5	13.6	72.5	13.6
64	73.0	17.0	74.0	17.2	73.5	13.8	73.5	13.8
65	74.0	17.2	75.0	17.5	74.5	14.0	74.5	14.0
66	75.0	17.5	76.0	17.8	75.5	14.2	75.5	14.2
67	76.0	17.8	77.0	18.0	76.5	14.4	76.5	14.4
68	77.0	18.0	78.0	18.2	77.5	14.6	77.5	14.6
69	78.0	18.2	79.0	18.5	78.5	14.8	78.5	14.8
70	79.0	18.5	80.0	18.8	79.5	15.0	79.5	15.0
71	80.0	18.8	81.0	19.0	80.5	15.2	80.5	15.2
72	81.0	19.0	82.0	19.2	81.5	15.4	81.5	15.4
73	82.0	19.2	83.0	19.5	82.5	15.6	82.5	15.6
74	83.0	19.5	84.0	19.8	83.5	15.8	83.5	15.8
75	84.0	19.8	85.0	20.0	84.5	16.0	84.5	16.0
76	85.0	20.0	86.0	20.2	85.5	16.2	85.5	16.2
77	86.0	20.2	87.0	20.5	86.5	16.4	86.5	16.4
78	87.0	20.5	88.0	20.8	87.5	16.6	87.5	16.6
79	88.0	20.8	89.0	21.0	88.5	16.8	88.5	16.8
80	89.0	21.0	90.0	21.2	89.5	17.0	89.5	17.0
81	90.0	21.2	91.0	21.5	90.5	17.2	90.5	17.2
82	91.0	21.5	92.0	21.8	91.5	17.4	91.5	17.4
83	92.0	21.8	93.0	22.0	92.5	17.6	92.5	17.6
84	93.0	22.0	94.0	22.2	93.5	17.8	93.5	17.8
85	94.0	22.2	95.0	22.5	94.5	18.0	94.5	18.0
86	95.0	22.5	96.0	22.8	95.5	18.2	95.5	18.2
87	96.0	22.8	97.0	23.0	96.5	18.4	96.5	18.4
88	97.0	23.0	98.0	23.2	97.5	18.6	97.5	18.6
89	98.0	23.2	99.0	23.5	98.5	18.8	98.5	18.8
90	99.0	23.5	100.0	23.8	99.5	19.0	99.5	19.0
91	100.0	23.8	101.0	24.0	100.5	19.2	100.5	19.2
92	101.0	24.0	102.0	24.2	101.5	19.4	101.5	19.4
93	102.0	24.2	103.0	24.5	102.5	19.6	102.5	19.6
94	103.0	24.5	104.0	24.8	103.5	19.8	103.5	19.8
95	104.0	24.8	105.0	25.0	104.5	20.0	104.5	20.0
96	105.0	25.0	106.0	25.2	105.5	20.2	105.5	20.2
97	106.0	25.2	107.0	25.5	106.5	20.4	106.5	20.4
98	107.0	25.5	108.0	25.8	107.5	20.6	107.5	20.6
99	108.0	25.8	109.0	26.0	108.5	20.8	108.5	20.8
100	109.0	26.0	110.0	26.2	109.5	21.0	109.5	21.0

APPENDIX F

Appendix F.1. Commercial freshwater finfish fishery catch data, Kuskokwim Area, 1977-2000

Year	Number of Fishermen ^b	Number Caught ^a		Total Weight (lbs)		Total Value (\$)		
		Whitefish ^c	Burbot	Whitefish	Burbot	Whitefish	Burbot	Total
1977	3	718	0	d	0	952	0	952
1978	b	1,735	0	6,017	0	d	0	d
1979	b	3,219	0	11,211	0	d	0	d
1980	4	603	0	2,173	0	830	0	830
1981	4	1,197	0	4,620	0	2,310	0	2,310
1982	5	1,512	0	6,219	0	2,856	0	2,856
1983	0	0	0	0	0	0	0	0
1984	2	0	651	0	d	0	d	d
1985	5	555	1,829	2,275	2,016	1,137	455	1,593
1986	3	0	0	0	3,428	0	857	857
1987	4	417	0	1,260	0	1,008	0	1,008
1988	3	d	d	2,588	7	1,991	3	1,994
1989	7	178	282	583	270	501	597	1,098
1990	11	1,664	d	5,502	10	5,166	5	5,171
1991	5	1,413	41	2,442	256	2,412	197	2,609
1992	6	2,124	18	6,309	86	6,285	43	6,328
1993	5	2,509	0	5,208	0	4,898	0	4,898
1994	3	2,393	0	4,905	0	4,345	0	4,345
1995	1	d	0	2,363	0	2,507	0	2,507
1996	2	3,139	0	4,915	0	4,776	0	4,776
1997	14	4,447	0	5,770	0	4,832	0	4,832
1998	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0

a Does not include catches incidental to the commercial salmon fishery.

b Does not include fishers who delivered catches incidental to the commercial salmon fishery.

c Includes cisco, pike and blackfish (weight only).

d Data not available.

APPENDIX G

Appendix G.1. Commercial miscellaneous saltwater finfish fishery catch data, Kuskokwim Area, 1988-2000.

Year	Number of Fishermen	Species	Number Caught	Total weight (lbs)	Total value (\$)
1988	4	Tom Cod ^a	b	439	878
1989	2	Tom Cod	b	591	1,180
1990	1	Tom Cod	300	221	442
1991	2	Tom Cod	b	1,356	2,690
1992	1	Tom Cod	b	303	303
1993	0	-- --	0	0	0
1994	1	Tom Cod	b	100	160
1995	0	-- --	0	0	0
1996	1	Tom Cod	b	713	1,426
1997	1	Tom Cod	b	250	500
1998	0	-- --	0	0	0
1999	0	-- --	0	0	0
2000	0	-- --	0	0	0

a Tom Cod is the local name for Saffron Cod (Eleginus gracilis).

b Data not available.

APPENDIX H

Appendix H.1. Estimated biomass and commercial harvest of Pacific herring in Kuskokwim Area fishing districts, Alaska, 1981-2000.

District	Estimated	Harvest				Roe %	Estimated	Exploitation
	Biomass	Sac-roe	Bait	Waste	Total		Value	Rate
	(st)						(\$1000's)	(%)
2000								
Security Cove	5,237	284	15	0	299	10.7	62	5.7
Goodnews Bay	6,348	19	1	1	20	9.2	3	0.3
Cape Avinof	3,210	370	7	0	377	9.6	71	11.8
Nelson Is.	4,672	754	52	1	807	9.8	150	17.3
Nunivak Is.	3,487	41	-	0	41	9.9	12	1.2
Total	22,954	1,468	75	2	1,503	9.9	298	6.7
1999								
Security Cove	5,261	1,016	56	1	1,072	11.0	338	20.4
Goodnews Bay	6,896	1,332	33	0	1,366	11.3	301	19.8
Cape Avinof	3,555	516	18	0	533	11.0	185	15.0
Nelson Is.	6,655	1,267	97	2	1,366	11.2	430	20.5
Nunivak Is.	3,319	-	-	-	-	-	-	-
Total	25,686	4,131	204	3	4,337	11.1	1,254	16.9
1998								
Security Cove	4,017	1,012	-	0	1,012	11.5	202	25.2
Goodnews Bay	4,064	831	-	0	831	11.3	166	20.4
Cape Avinof	4,287	656	-	0	656	11.6	131	15.3
Nelson Is.	7,136	1,250	-	0	1,250	11.8	236	17.5
Nunivak Is.	3,778	202	-	0	202	9.8	0	5.3
Total	23,282	3,951	-	0	202	11.2	735	17.0
1997								
Security Cove	4,640	884	3	5	892	12.5	221	19.2
Goodnews Bay	4,752	805	-	0	805	14.2	228	16.9
Cape Avinof	4,616	687	-	0	687	11.5	157	14.9
Nelson Is.	7,909	778	-	0	778	12.7	198	9.8
Nunivak Is.	3,801	-	-	-	-	-	-	-
Total	25,718	3,154	3	5	3,163	12.7	804	12.3
1996								
Security Cove	6,867	1,795	59	5	1,859	11.6	1,251	27.1
Goodnews Bay	6,315	1,191	13	0	1,204	12.5	895	19.1
Cape Avinof	4,500	820	-	0	820	13.4	659	18.2
Nelson Is.	6,638	986	44	0	1,031	11.4	679	15.5
Nunivak Is.	4,197	61	40	0	101	9.9	39	2.4
Total	28,517	4,854	156	5	5,014	12.1	3,523	17.6
1995								
Security Cove	6,702	1,292	-	0	1,292	12.3	956	19.3
Goodnews Bay	4,224	1,051	-	3	1,054	13.5	848	25.0
Cape Avinof	3,627	485	-	0	485	12.5	363	13.4
Nelson Is.	7,754	1,112	-	0	1,112	10.6	710	14.3
Nunivak Is.	4,579	33	7	0	41	11.0	22	0.9
Total	26,886	3,974	7	3	3,985	12.2	2,900	14.8
1994								
Security Cove	7,638	-	-	-	-	-	-	-
Goodnews Bay	5,679	1,061	-	0	1,061	12.3	391	18.7
Cape Avinof	2,827	427	-	0	427	12.2	156	15.1
Nelson Is.	5,564	713	4	0	717	11.0	235	12.9
Nunivak Is.	4,921	14	-	0	14	8.6	4	0.3
Total	26,629	2,215	4	0	2,219	11.8	787	8.3
1993								
Security Cove	6,995	5	-	0	5	12.8	2	0.1
Goodnews Bay	6,211	945	9	0	954	10.3	293	15.4
Cape Avinof	2,837	206	9	0	215	12.0	75	7.6
Nelson Is.	4,944	613	52	74	739	10.6	198	14.9
Nunivak Is.	5,176	-	-	-	-	-	-	-
Total	26,163	1,769	70	74	1,913	10.6	568	7.3
1992								
Security Cove	7,773	697	127	10	834	9.2	285	10.7
Goodnews Bay	5,572	711	29	0	740	9.5	286	13.3
Cape Avinof	3,446	443	9	0	452	9.9	178	13.1
Nelson Is.	5,275	188	52	6	246	8.3	78	4.7
Nunivak Is.	5,703	7	20	0	27	8.5	4	0.5
Total	27,769	2,046	237	16	2,299	9.4	830	8.3

- continued -

District	Estimated Biomass	Harvest				Roe %	Estimated Value	Exploitation Rate
	(st)	Sac-roe	Bait	Waste	Total		(\$1000's)	(%)
1991								
Security Cove	4,434	561	9	-	570	9.3	208	12.9
Goodnews Bay	4,387	259	4	-	263	8.9	93	6.0
Cape Avinof	2,083	240	27	-	267	9.5	94	12.8
Nelson Is.	2,385	-	-	-	-	-	-	-
Nunivak Is.	3,903	17	42	-	59	7.5	9	-
Total	17,192	1,077	82	-	1,159	9.2	404	6.7
1990								
Security Cove	2,650	174	60	0	234	8.7	94	8.8
Goodnews Bay	2,577	427	28	0	455	12.2	314	17.7
Cape Avinof	2,020	49	1	0	50	12.0	35	2.5
Nelson Is.	2,705	-	-	-	-	-	-	-
Nunivak Is.	422	-	-	-	-	-	-	-
Total	10,374	650	89	0	739	11.2	443	7.1
1989								
Security Cove	2,830	544	10	0	554	9.4	256	19.6
Goodnews Bay	4,044	453	162	0	616	8.4	335	15.2
Cape Avinof	2,789	90	39	0	129	8.0	54	4.6
Nelson Is.	3,316	122	100	11	233	8.5	57	7.0
Nunivak Is.	617	79	37	0	116	9.4	42	18.8
Total	13,587	1,289	347	11	1,647	8.9	744	12.1
1988								
Security Cove	4,906	324	-	0	324	9.3	362	6.6
Goodnews Bay	4,479	473	10	0	483	8.0	463	10.8
Cape Avinof	4,108	348	-	0	348	8.6	264	8.5
Nelson Is.	7,152	760	15	0	775	9.2	713	10.8
Nunivak Is.	2,800	-	-	0	-	-	-	-
Total	23,445	1,905	25	0	1,930	8.8	1,802	8.2
1987								
Security Cove	2,300	312	1	0	313	9.7	242	13.6
Goodnews Bay	2,000	179	142	0	321	7.3	133	16.1
Nelson Is.	8,100	915	8	0	923	9.2	661	11.4
Nunivak Is.	4,400	254	160	0	414	7.8	231	9.4
Total	16,800	1,660	311	0	1,971	8.9	1,267	11.7
1986								
Security Cove	3,700	747	4	0	751	11.2	535	20.3
Goodnews Bay	3,000	554	3	0	557	10.4	325	18.6
Nelson Is.	7,300	852	34	0	886	10.3	428	12.1
Nunivak Is.	6,000	469	42	0	511	10.1	213	8.5
Total	20,000	2,622	83	0	2,705	10.5	1,501	13.5
1985								
Security Cove	4,900	703	-	30	733	10.1	355	15.0
Goodnews Bay	4,300	711	-	13	724	8.7	309	16.8
Nelson Is.	9,500	967	10	0	977	10.6	527	10.3
Nunivak Is.	5,700	349	9	0	358	8.9	146	6.3
Total	24,400	2,730	19	43	2,792	9.8	1,337	11.4
1984								
Security Cove	5,100	325	-	10	335	11.8	110	6.6
Goodnews Bay	4,100	667	-	50	717	10.1	168	17.5
Total	9,200	992	-	60	1,052	10.7	278	11.4
1983								
Security Cove	6,400	966	107	0	1,073	9.4	443	16.8
Goodnews Bay	3,200	426	9	0	435	9.4	185	13.6
Total	9,600	1,392	116	0	1,508	9.4	628	15.7
1982								
Security Cove	5,100	707	106	0	813	9.3	271	15.9
Goodnews Bay	2,600	437	49	0	486	9.5	188	18.7
Total	7,700	1,144	155	0	1,299	9.4	459	16.9
1981								
Security Cove	8,300	1,150	23	0	1,173	8.1	347	14.1
Goodnews Bay	4,300	558	99	0	657	7.7	196	15.3
Total	12,600	1,708	122	0	1,830	8.0	543	14.5

Appendix H.2. Number of buyers and fishers participating in Kuskokwim Area Pacific herring fisheries, Alaska, 1981-2000.

Year	District	Number of Buyers	Number of Fishers	Number of Deliveries
<u>2000</u>	Security Cove	10	79	162
	Goodnews Bay	3	57	87
	Cape Avinof	1	86	399
	Nelson Island	4	86	354
	Nunivak Island	1	35	35
<u>1999</u>	Security Cove	7	87	242
	Goodnews Bay	5	94	679
	Cape Avinof	3	117	656
	Nelson Island	4	94	483
	Nunivak Island	No commercial opening		
<u>1998</u>	Security Cove	9	78	255
	Goodnews Bay	2	84	580
	Cape Avinof	2	109	561
	Nelson Island	3	86	829
	Nunivak Island	1	7	7
<u>1997</u>	Security Cove	14	222	528
	Goodnews Bay	3	139	933
	Cape Avinof	2	145	560
	Nelson Island	3	105	348
	Nunivak Island	1	12 ^a	0
<u>1996</u>	Security Cove	14	326	601
	Goodnews Bay	5	182	1,186
	Cape Avinof	2	161	833
	Nelson Island	3	109	515
	Nunivak Island	2	24	85
<u>1995</u>	Security Cove	12	106	257
	Goodnews Bay	4	127	878
	Cape Avinof	2	93	537
	Nelson Island	4	100	575
	Nunivak Island	2	13	46
<u>1994</u>	Security Cove	No commercial opening		
	Goodnews Bay	2	103	683
	Cape Avinof	1	85	502
	Nelson Island	3	104	409
	Nunivak Island	1	12	14
<u>1993</u>	Security Cove	1	9	9
	Goodnews Bay	3	63	705
	Cape Avinof	1	97	478
	Nelson Island	1	73	487
	Nunivak Island	No commercial opening		

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Appendix H.2. (page 2 of 3)

Year	District	Number of Buyers	Number of Fishers	Number of Deliveries
<u>1992</u>	Security Cove	6	58	178
	Goodnews Bay	3	78	375
	Cape Avinof	2	121	335
	Nelson Island	3	85	222
	Nunivak Island	1	14	23
<u>1991</u>	Security Cove	6	52	100
	Goodnews Bay	2	103	137
	Cape Avinof	1	137	463
	Nelson Island	No commercial opening		
	Nunivak Island	2	17	31
<u>1990</u>	Security Cove	9	52	77
	Goodnews Bay	3	126	530
	Cape Avinof	1	101	109
	Nelson Island	No commercial opening		
	Nunivak Island	No commercial opening		
<u>1989</u>	Security Cove	8	104	108
	Goodnews Bay	6	138	533
	Cape Avinof	3	147	335
	Nelson Island	4	162	438
	Nunivak Island	3	45	210
<u>1988</u>	Security Cove	4	31	51
	Goodnews Bay	6	60	309
	Cape Avinof	1	98	485
	Nelson Island	7	174	547
	Nunivak Island	No commercial opening		
<u>1987</u>	Security Cove	8	65	67
	Goodnews Bay	4	117	191
	Nelson Island	9	235	633
	Nunivak Island	4	61	341
<u>1986</u>	Security Cove	11	88	199
	Goodnews Bay	5	104	319
	Nelson Island	4	163	1,099
	Nunivak Island	5	36	284
<u>1985</u>	Security Cove	6	107	268
	Goodnews Bay	5	83	420
	Nelson Island	6	143	776
	Nunivak Island	5	37	273
<u>1984</u>	Security Cove	4	38	86
	Goodnews Bay	4	130	390

-Continued-

Year	District	Number of Buyers	Number of Fishers	Number of Deliveries
<u>1983</u>	Security Cove	6	94	312
	Goodnews Bay	4	84	225
<u>1982</u>	Security Cove	3	107	250
	Goodnews Bay	3	84	297
<u>1981</u>	Security Cove	7	113	311
	Goodnews Bay	15	175	479

a Estimated number of permit holders

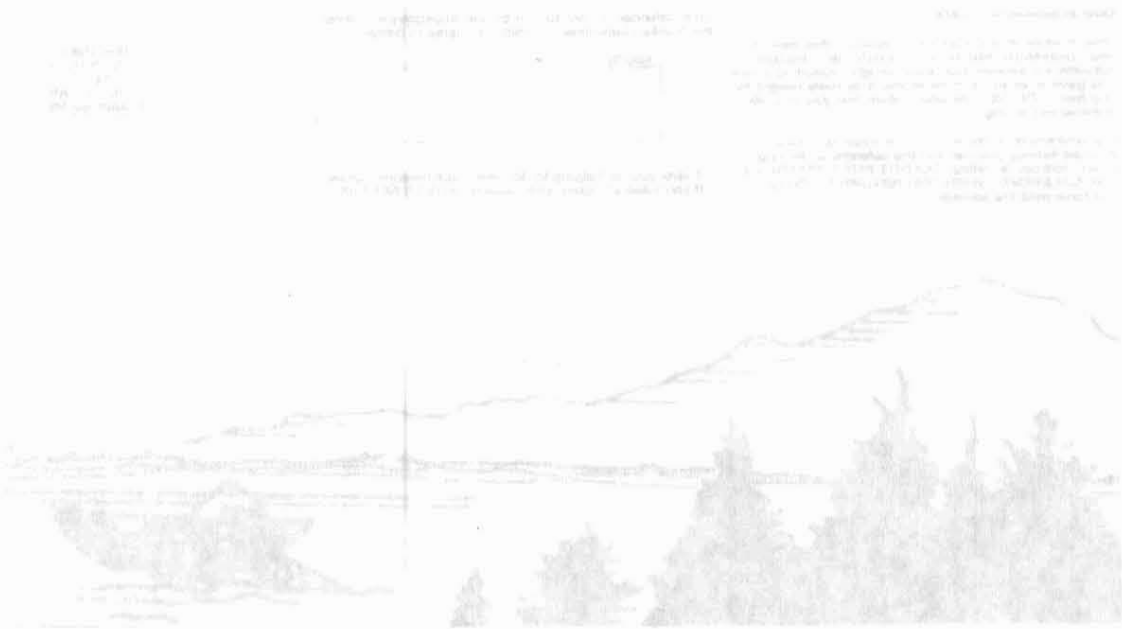
Appendix H.3. Commercial harvest, effort and value of Pacific herring in Kuskokwim Area fishing districts, Alaska, 1981-2000.

Year	District	Estimated Harvest (st)	Number of permits	Hours fished	CPUE ^a (st)	Estimated Value	Income per permit
2000	Security Cove	299	79	14	0.27	\$62,000	\$785
	Goodnews Bay	19.6	57	49	0.01	\$3,000	\$53
	Cape Avinof	377	86	58	0.08	\$71,000	\$826
	Nelson Is.	806	86	20	0.47	\$150,000	\$1,744
	Nunivak Is.	41	35	93	0.01	\$12,000	\$343
1999	Security Cove	1072	97	9	1.23	\$338,000	\$3,485
	Goodnews Bay	1366	94	49	0.30	\$301,000	\$3,202
	Cape Avinof	533	117	51	0.09	\$185,000	\$1,581
	Nelson Is.	1366	94	22	0.66	\$430,000	\$4,574
	Nunivak Is.	--	--	--	--	--	--
1998	Security Cove	1012	78	28.5	0.46	\$202,340	\$2,594
	Goodnews Bay	831	84	79	0.13	\$166,220	\$1,979
	Cape Avinof	656	109	44	0.14	\$131,120	\$1,203
	Nelson Is.	1250	86	76	0.18	\$235,900	\$2,743
	Nunivak Is.	202	7	6	0.05	\$440	\$63
1997	Security Cove	892	222	10.5	0.38	\$221,000	\$995
	Goodnews Bay	805	139	65.0	0.09	\$228,000	\$1,640
	Cape Avinof	687	145	26.0	0.18	\$157,000	\$1,083
	Nelson Is.	778	105	10.0	0.74	\$198,000	\$1,886
	Nunivak Is.	0	12	70.0	0.00	\$0	\$0
1996	Security Cove	1859	326	5.5	1.04	\$1,252,270	\$3,841
	Goodnews Bay	1204	182	45.0	0.15	\$893,900	\$4,912
	Cape Avinof	820	161	57.0	0.09	\$659,280	\$4,095
	Nelson Is.	1031	109	25.0	0.38	\$676,624	\$6,208
	Nunivak Is.	101	24	256.0	0.02	\$38,234	\$1,593
1995	Security Cove	1292	106	12.0	1.02	\$956,000	\$9,019
	Goodnews Bay	1054	127	56.0	0.15	\$848,000	\$6,677
	Cape Avinof	485	93	48.0	0.11	\$363,000	\$3,903
	Nelson Is.	1113	100	28.0	0.40	\$710,000	\$7,100
	Nunivak Is.	41	13	387.0	0.01	\$22,000	\$1,692
1994	Security Cove	--	--	--	--	--	--
	Goodnews Bay	1062	103	38.0	0.27	\$391,000	\$3,796
	Cape Avinof	427	85	62.0	0.08	\$156,000	\$1,835
	Nelson Is.	717	104	26.0	0.27	\$235,000	\$2,260
	Nunivak Is.	14	12	6.0	0.19	\$4,000	\$333
1993	Security Cove	5	9	24.5	0.02	\$2,000	\$222
	Goodnews Bay	954	63	123.0	0.12	\$293,000	\$4,651
	Cape Avinof	215	97	106.0	0.02	\$75,000	\$773
	Nelson Is.	739	73	63.5	0.16	\$198,000	\$2,712
	Nunivak Is.	--	--	--	--	--	--
1992	Security Cove	834	58	34.0	0.42	\$285,000	\$4,914
	Goodnews Bay	740	78	29.0	0.33	\$286,000	\$3,667
	Cape Avinof	452	121	12.0	0.31	\$178,000	\$1,471
	Nelson Is.	246	85	10.0	0.29	\$78,000	\$918
	Nunivak Is.	27	14	6.0	0.32	\$4,000	\$286
1991	Security Cove	570	52	12.0	0.91	\$208,000	\$4,000
	Goodnews Bay	263	103	4.0	0.64	\$93,000	\$903
	Cape Avinof	267	137	28.0	0.07	\$94,000	\$686
	Nelson Is.	--	--	--	--	--	--
	Nunivak Is.	59	17	12.0	0.29	\$9,000	\$529

-Continued-

Year	District	Estimated Harvest (st)	Number of permits	Hours fished	CPUE ^a (st)	Estimated Value	Income per permit
1990	Security Cove	234	52	7.0	0.64	\$94,000	\$1,808
	Goodnews Bay	455	126	32.0	0.11	\$314,000	\$2,492
	Cape Avinof	50	101	3.0	0.17	\$35,000	\$347
	Nelson Is.	--	--	--	--	--	--
	Nunivak Is.	--	--	--	--	--	--
1989	Security Cove	554	104	4.0	1.33	\$256,000	\$2,462
	Goodnews Bay	616	138	50.0	0.09	\$335,000	\$2,428
	Cape Avinof	129	147	194.0	0.00	\$54,000	\$367
	Nelson Is.	233	162	15.0	0.10	\$57,000	\$352
	Nunivak Is.	116	45	186.0	0.01	\$42,000	\$933
1988	Security Cove	324	31	23.5	0.44	\$362,000	\$11,677
	Goodnews Bay	483	60	40.0	0.20	\$463,000	\$7,717
	Cape Avinof	348	98	88.5	0.04	\$264,000	\$2,694
	Nelson Is.	775	174	7.5	0.59	\$713,000	\$4,098
	Nunivak Is.	--	--	--	--	--	--
1987	Security Cove	313	65	13.0	0.37	\$242,000	\$3,723
	Goodnews Bay	321	117	11.0	0.25	\$133,000	\$1,137
	Nelson Is.	923	235	6.0	0.65	\$661,000	\$2,813
	Nunivak Is.	414	61	39.0	0.17	\$231,000	\$3,787
1986	Security Cove	751	88	73.0	0.12	\$535,000	\$6,080
	Goodnews Bay	557	104	53.0	0.10	\$325,000	\$3,125
	Nelson Is.	886	163	40.0	0.14	\$428,000	\$2,626
	Nunivak Is.	511	136	156.0	0.09	\$213,000	\$5,917
1985	Security Cove	733	107	125.0	0.05	\$335,000	\$3,131
	Goodnews Bay	724	83	130.0	0.07	\$309,000	\$3,723
	Nelson Is.	977	143	44.0	0.16	\$527,000	\$3,685
	Nunivak Is.	358	37	228.0	0.04	\$146,000	\$3,946
1984	Security Cove	335	38	345.0	0.03	\$110,000	\$2,895
	Goodnews Bay	717	130	139.0	0.04	\$168,000	\$1,292
1983	Security Cove	1073	94	87.0	0.13	\$443,000	\$4,713
	Goodnews Bay	435	84	278.0	0.02	\$185,000	\$2,202
1982	Security Cove	813	107	302.0	0.03	\$271,000	\$2,533
	Goodnews Bay	486	84	314.0	0.02	\$188,000	\$2,238
1981	Security Cove	1173	113	90.0	0.12	\$347,000	\$3,071
	Goodnews Bay	657	175	133.0	0.03	\$196,000	\$1,120

a CPUE = catch per permit per hour fished



APPENDIX S

MAY 2000		SUBSTRATE BUDGET FOR THE CANYON	
SUBSTRATE	AMOUNT	UNIT	PERCENT
Gravel	100	kg	100%
Sand	50	kg	50%
Clay	20	kg	20%
Organic	10	kg	10%
Other	5	kg	5%

JUNE 2000		SUBSTRATE BUDGET FOR THE CANYON	
SUBSTRATE	AMOUNT	UNIT	PERCENT
Gravel	120	kg	120%
Sand	60	kg	60%
Clay	25	kg	25%
Organic	15	kg	15%
Other	10	kg	10%

Appendix S. 1. 2000 Kuskokwim Area Subsistence Salmon Harvest Calendar.

Dear Subsistence Fishers:

Please write in the number of salmon that people in your household caught for subsistence. Include all subsistence salmon that were caught, including those you gave to others and those you may have caught for dog food. DO NOT include salmon that you sold when commercial fishing.

Our address is on the back of this calendar. When finished fishing, you can fold the calendar so that our return address is visible. DO NOT PUT POSTAGE ON THE CALENDAR WHEN YOU RETURN IT TO US. We have paid the postage.

This calendar is sent to you by the Subsistence Division of the Alaska Department of Fish and Game in Bethel.

NAME

Bulk Rate
U. S. Postage
Paid
Fairbanks, AK
Permit No. 99

Thank you for helping to document subsistence harvests. If you have any questions, please call (907) 543-3100.



MAY 2000

SUBSISTENCE SALMON CALENDAR

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	14	15	16	17	18	19	20
TARYAQVAK =	King _____	King _____	King _____	King _____	King _____	King _____	King _____
IQALLUK =	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____
SAYAK =	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____
	21	22	23	24	25	26	27
CHINOOK =	King _____	King _____	King _____	King _____	King _____	King _____	King _____
	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____
"RED SALMON" =	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____
	28	29	30	31	* At Quinhagak, a very late Spring in 1916 caused the sea ice to remain late, stretching far out into Kuskokwim Bay. There was an unusual number of walrus, so many in fact, that at times people were afraid to venture out on to the ice. Henkelman and Vitt, Harmonious to Dwell, 1985		
	King _____	King _____	King _____	King _____			
	Chum _____	Chum _____	Chum _____	Chum _____			
	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____			

JUNE 2000

SUBSISTENCE SALMON CALENDAR

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2	3
					King _____	King _____	King _____
					Chum _____	Chum _____	Chum _____
					Sockeye _____	Sockeye _____	Sockeye _____
	4	5	6	7	8	9	10
TARYAQVAK =	King _____	King _____	King _____	King _____	King _____	King _____	King _____
IQALLUK =	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____
SAYAK =	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____
	11	12	13	14	15	16	17
CHINOOK =	King _____	King _____	King _____	King _____	King _____	King _____	King _____
	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____
"RED SALMON" =	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____
	18	19	20	21	22	23	24
	King _____	King _____	King _____	King _____	King _____	King _____	King _____
	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____
	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____
	25	26	27	28	29	30	
	King _____	King _____	King _____	King _____	King _____	King _____	
	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____	Chum _____	
	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	Sockeye _____	



Appendix S.1 Continued (page 2 of 2)

Thank you for helping to document subsistence harvests. If you have any questions, please call (907) 543-3100. Please return the calendar when you are finished subsistence salmon fishing for 2000.

NAME LABEL



JULY 2000

SUBSISTENCE SALMON CALENDAR

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
In 1932 "Three hundred and seventy-two natives fished the river for local requirements (subsistence) using 498 set gill nets of 7,470 fathoms, 51 fishwheels, and a number of small boats. They prepared 485 tons of dried chums." U.S. Bureau of Fisheries 1932							1 King _____ Chum _____ Sockeye _____
TARYAQVAK =	2 King _____ Chum _____ Sockeye _____	3 King _____ Chum _____ Sockeye _____	4 King _____ Chum _____ Sockeye _____	5 King _____ Chum _____ Sockeye _____	6 King _____ Chum _____ Sockeye _____	7 King _____ Chum _____ Sockeye _____	8 King _____ Chum _____ Sockeye _____
IQALLUK =	9 King _____ Chum _____ Sockeye _____	10 King _____ Chum _____ Sockeye _____	11 King _____ Chum _____ Sockeye _____	12 King _____ Chum _____ Sockeye _____	13 King _____ Chum _____ Sockeye _____	14 King _____ Chum _____ Sockeye _____	15 King _____ Chum _____ Sockeye _____
CHINOOK =							
"RED SALMON" =							
	16 King _____ Chum _____ Sockeye _____	17 King _____ Chum _____ Sockeye _____	18 King _____ Chum _____ Sockeye _____	19 King _____ Chum _____ Sockeye _____	20 King _____ Chum _____ Sockeye _____	21 King _____ Chum _____ Sockeye _____	22 King _____ Chum _____ Sockeye _____
	23 King _____ Chum _____ Sockeye _____	24 King _____ Chum _____ Sockeye _____	25 King _____ Chum _____ Sockeye _____	26 King _____ Chum _____ Sockeye _____	27 King _____ Chum _____ Sockeye _____	28 King _____ Chum _____ Sockeye _____	29 King _____ Chum _____ Sockeye _____
QAKIYAK =							
	30 King _____ Chum _____ Sockeye _____ Coho _____	31 King _____ Chum _____ Sockeye _____ Coho _____	"In 1960, 111 people fished commercially in the Kuskokwim district. The 1961 total increased by 100% to 222 fishermen and in 1962, increased further by 60% to 355." ADFG Annual Report, Arctic - Yukon - Kuskokwim Area 1963.				
"SILVER SALMON" =							

AUGUST 2000

SUBSISTENCE SALMON CALENDAR

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1 King _____ Chum _____ Sockeye _____ Coho _____	2 King _____ Chum _____ Sockeye _____ Coho _____	3 King _____ Chum _____ Sockeye _____ Coho _____	4 King _____ Chum _____ Sockeye _____ Coho _____	5 King _____ Chum _____ Sockeye _____ Coho _____
TARYAQVAK =	6 King _____ Chum _____ Sockeye _____ Coho _____	7 King _____ Chum _____ Sockeye _____ Coho _____	8 King _____ Chum _____ Sockeye _____ Coho _____	9 King _____ Chum _____ Sockeye _____ Coho _____	10 King _____ Chum _____ Sockeye _____ Coho _____	11 King _____ Chum _____ Sockeye _____ Coho _____	12 King _____ Chum _____ Sockeye _____ Coho _____
IQALLUK =							
SAYAK =							
QAKIYAK =							
CHINOOK =	13 Chum _____ Sockeye _____ Coho _____	14 Chum _____ Sockeye _____ Coho _____	15 Chum _____ Sockeye _____ Coho _____	16 Chum _____ Sockeye _____ Coho _____	17 Chum _____ Sockeye _____ Coho _____	18 Chum _____ Sockeye _____ Coho _____	19 Chum _____ Sockeye _____ Coho _____
"RED SALMON" =							
"SILVER SALMON" =							
	20 Chum _____ Sockeye _____ Coho _____	21 Chum _____ Sockeye _____ Coho _____	22 Chum _____ Sockeye _____ Coho _____	23 Chum _____ Sockeye _____ Coho _____	24 Chum _____ Sockeye _____ Coho _____	25 Chum _____ Sockeye _____ Coho _____	26 Chum _____ Sockeye _____ Coho _____
	27 Chum _____ Sockeye _____ Coho _____	28 Chum _____ Sockeye _____ Coho _____	29 Chum _____ Sockeye _____ Coho _____	30 Chum _____ Sockeye _____ Coho _____	31 Chum _____ Sockeye _____ Coho _____		

SEPTEMBER 2000

SUBSISTENCE SALMON CALENDAR

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
"In light of the available spawning grounds, salmon productivity is relatively low, compared to other areas of the state and the Pacific coast. Quality, not quantity, is the asset of the Arctic, Yukon and Kuskokwim fisheries. The king, coho and chum salmon packs have been graded the highest quality. It is hoped that more A-Y-K salmon will find their way into specially canned-cured packs and premium quality frozen-fresh markets." ADFG Annual Report, Arctic - Yukon - Kuskokwim Area, 1964						1 Chum _____ Sockeye _____ Coho _____	2 Chum _____ Sockeye _____ Coho _____
IQALLUK =	3 Chum _____ Sockeye _____ Coho _____	4 Chum _____ Sockeye _____ Coho _____	5 Chum _____ Sockeye _____ Coho _____	6 Chum _____ Sockeye _____ Coho _____	7 Chum _____ Sockeye _____ Coho _____	8 Chum _____ Sockeye _____ Coho _____	9 Chum _____ Sockeye _____ Coho _____
SOCKEYE =							
QAKIYAK =							
	10 Chum _____ Sockeye _____ Coho _____	11 Chum _____ Sockeye _____ Coho _____	12 Chum _____ Sockeye _____ Coho _____	13 Chum _____ Sockeye _____ Coho _____	14 Chum _____ Sockeye _____ Coho _____	15 Chum _____ Sockeye _____ Coho _____	16 Chum _____ Sockeye _____ Coho _____
"RED SALMON" =							
"SILVER SALMON" =							
	17 Chum _____ Sockeye _____ Coho _____	18 Chum _____ Sockeye _____ Coho _____	19 Chum _____ Sockeye _____ Coho _____	20 Chum _____ Sockeye _____ Coho _____	21 Chum _____ Sockeye _____ Coho _____	22 Chum _____ Sockeye _____ Coho _____	23 Chum _____ Sockeye _____ Coho _____

SEPTEMBER IS CONTINUED ON BACK SIDE

Appendix S. 2. 2000 Kuskokwim Area Subsistence Salmon Harvest Survey Form.

Division of Subsistence, Bethel		COMM. ID# _____	
Chinook= "taryaquak,"	Chum= "iqalluk,"	Sockeye= "sayak,"	Coho= "qakityaq" HHID# _____
KUSKOKWIM AREA 2000			
POST-SEASON SUBSISTENCE SALMON HOUSEHOLD HARVEST SURVEY			
* (Questions marked with an asterisk are asked of all households interviewed) Ik			
Community: _____		Household Head Name: _____	
Survey Date: 10 11, 2000		Name of Person Interviewed: HH, _____	
Interviewer: SM RK		Household P.O. Box: _____	
Was this household in community last year?: No Yes			
*1. Did this household catch salmon for subsistence use this year? No (go to # 3) Yes			
2. May I have your salmon calendar? (If household fished without using calendar, go to # 7)			
Picked up by interviewer _____ (go to # 10)		Mailed it to ADFG _____ Didn't use _____	
		Didn't get one _____ Lost or unavailable _____	
*3. Does this household usually subsistence fish for salmon? No Yes			
HOUSEHOLD DIDN'T FISH (Household was not involved in harvesting/catching salmon)			
4. Did this household help another household process ("put up") salmon?			
No _____ (go to # 17)		Yes: (Names, HHIDs) _____	
5. Please estimate how many salmon all of you processed ("put up").			
CHINOOK _____ ("kings")	CHUM _____ ("dogs")	SOCKEYE _____ ("reds")	COHO _____ ("silvers")
			Could not estimate _____
6. Please estimate how many salmon were for your household only.			
CHINOOK _____ ("kings")	CHUM _____ ("dogs")	SOCKEYE _____ ("reds")	COHO _____ ("silvers")
(Go to Question 17) _____			
HOUSEHOLD FISHED, ADF&G DOES NOT HAVE CALENDAR			
7. Did other households fish with you? No Yes: (Names, HHIDs) _____			
8. Please estimate how many salmon your household (or all households together) caught.			
(Ask about Coho salmon and also salmon already eaten, frozen, given to other households, sent to friends, and dog food)			
CHINOOK _____ ("kings")	CHUM _____ ("dogs")	SOCKEYE _____ ("reds")	COHO _____ ("silvers")
			Salmon are included with Households _____
9. Please estimate how many salmon were for your household only.			
CHINOOK _____ ("kings")	CHUM _____ ("dogs")	SOCKEYE _____ ("reds")	COHO _____ ("silvers")
			ALL PERCENT _____
(Go to Question 15) _____			
HOUSEHOLD FISHED, ADF&G DOES HAVE CALENDAR			
10. Are all of the salmon this household caught written on the calendar? No Yes			
(Ask about Coho salmon and also salmon already eaten, frozen, given to other households, sent to friends, and dog food)			
11. How many additional salmon, not written on the calendar, were caught?			
CHINOOK _____ ("kings")	CHUM _____ ("dogs")	SOCKEYE _____ ("reds")	COHO _____ ("silvers")
12. Did other households fish with you? No (go to # 15) Yes: (Names, HHIDs) _____			
(This Block is continued on back side)			

COFFING, \SF00MLK00.DOC, 16:00, 25 Sep. 2000

lk

13. Are the salmon they caught written on your calendar? No ☐ Yes ☐

14. Please estimate how many salmon were for your household only. All Percent
 CHINOOK CHUM SOCKEYE COHO
 (Go to Question 15)

FISHING GEAR (For subsistence fishing households only)

15A. What type(s) of fishing gear was used for catching subsistence salmon this year?
 Drift net Set Net Rod and Reel Fishwheel Spear Sein

15B. What mesh size (gill net) was used for catching King Salmon this year? (inches)

16. How many salmon did your household catch and keep with Rod and Reel this year?
 CHINOOK CHUM SOCKEYE COHO

COMMERCIAL FISHING

*17. Does this household commercial fish? No ☐ (go to # 21), Yes ☐
 If yes, where? Kuskokwim River or Bay Yukon Area Bristol Bay

18. Were all of the salmon caught when commercial fishing sold or were some brought home to eat or processed for subsistence? All were sold ☐ Some were used for subsistence ☐

19. How many commercially caught salmon were used for subsistence?
 CHINOOK CHUM SOCKEYE COHO

20. Are those salmon listed on the calendar or included in the catch numbers you gave me?
 Yes ☐ No ☐

HOUSEHOLD SIZE

*21. How many people live in this household now?

DOG FOOD (For subsistence fishing households only)

22. Did this household catch salmon for dogfood?
 Yes ☐ No ☐ (go to # 26) Only backbones/heads/guts/scraps ☐ (go to # 26)

23. How many salmon? CHUM SOCKEYE COHO
 ("dogs") ("reds") ("silvers")

24. Are the salmon caught for dogfood included on your calendar or in the estimates you gave me?
 Yes ☐ No ☐

25. How many dogs does this household have?

26. (For subsistence fishing households only)
How was subsistence salmon fishing for your household this year?
 Kings: ☐ Very Good ☐ Average ☐ Poor If Poor, why?
 Chums: ☐ Very Good ☐ Average ☐ Poor If Poor, why?
 Sockeye: ☐ Very Good ☐ Average ☐ Poor If Poor, why?
 Coho: ☐ Very Good ☐ Average ☐ Poor If Poor, why?

*27. Comments, suggestions, or questions? (regulations, etc)

A summary of this survey will be sent to you next spring (May).

Appendix S. 3. 2000 Kuskokwim Area Subsistence Salmon Harvest Survey Postcard.

Dear Kuskokwim Area Resident,

Please take a moment to answer the questions on the back side of this card and drop it in the mail to us. No stamp is necessary, postage is already paid. We will mail you a subsistence salmon harvest summary in Spring after the survey data is compiled.

We appreciate your help to document subsistence salmon harvests. We use this information to help the Board of Fisheries and the Department of Fish and Game make informed management decisions affecting the Kuskokwim Area. Your household harvest information remains confidential. Please call if you have any questions.

Thank you,

Subsistence Division
Room 214, BNC Complex
Bethel (543-3100)

(correct your address if necessary)

NAME: _____

P.O. BOX: _____

CITY, STATE: _____

ZIPCODE: _____

Did your household harvest salmon for subsistence use this year?

(include any salmon kept for subsistence when commercial fishing) Yes _____ No _____

How many subsistence salmon did your household harvest?

(include salmon eaten, given away, frozen, dried, smoked, canned, or for dogfood)

Chinook _____
(King salmon)

Chum _____
(Dog salmon)

Sockeye _____
(Red salmon)

Coho _____
(Silver salmon)

What type(s) of gear did your household use to catch subsistence salmon ?

Set net _____

Drift net _____

Fishwheel _____

Rod and reel _____

How was subsistence salmon fishing for your household this year?

King: Very good _____ Average _____ Poor, If Poor, why _____

Sockeye: Very good _____ Average _____ Poor, If Poor, why _____

Chum: Very good _____ Average _____ Poor, If Poor, why _____

Coho: Very good _____ Average _____ Poor, If Poor, why _____